December 2015

Fourth Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marín International Airport (LMMIA)

CARIBBEAN AIRPORT FACILITIES, INC.

Ref.: 354-2015.12.17 4th Bimonthly Report CAF Monitoring Wells Sampling Report FOIA

Prepared by: CHES Services Corp. d/b/a Fernando L. Rodríguez, P.E. & Associates 2015

EXECUTIVE SUMMARY

As part of the *Subsurface Investigation Plan ("SIP"),* developed on March 2012 to delineate the vertical and horizontal extent of subsurface contamination with jet fuel products in the soils and groundwater in the vicinity of the Caribbean Airport Facilities, Inc. (CAF) at the Luis Muñoz Marin International Airport (LMMIA), progressive reports are to be presented on a bimonthly basis to the U.S. EPA.

This report summarizes activities performed after the installation of monitoring wells at the Luis Muñoz Marin International Airport (LMMIA) mainly in areas operated by Caribbean Airport Facilities, Inc. (CAF). This fourth bimonthly report herein summarizes events documented until the week ending Friday, December 25th, 2015.

SIGNATURE OF ENVIRONMENTAL PROFESSIONAL

A **Subsurface Investigation** effort was performed to identify any evident, current and/or potential, environmental contamination at the Luis Muñoz Marin International Airport (LMMIA) property lot, operated by Caribbean Airport Facilities, Inc. (CAF). This study was performed as per the request of **Ms. Jean Tirri,** representing CAF.

Environmental Professional's Signature

December 30, 2015
Date

Name: Fernando L. Rodríguez, P. E., SC

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Fourth Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marin International Airport (LMMIA)

1.0 INTRODUCTION

The period encompassed within the past two (2) months includes:

> The first week of November (week ending Friday, November 6, 2015) through the last week of December (week ending Friday, December 25, 2015).

Within this period, the **Third Groundwater Bimonthly Sampling** event was scheduled and performed. Daily Activities for both sampling days are herein included (November 11-12, 2015). No major weather nor airport operational delays occurred during those two (2) days of sampling activities. All sampling and QA/QC procedures were followed by all project teams involved.

Regardless of the proper packing procedures followed, the laboratory was unable to analyze groundwater collected from the deep well at location 6 (MW6S) for TPH-DRO; the bottles arrived shattered.

Tabulated Results of this sampling are included as an attachment to this section. In addition, a comparison table is included showing results from the initial sampling (May 2015) and the bimonthly sampling performed on September 2015 for easy comparison with this (November 2015) and future results.

Significant reduction in TPH-GRO or volatile range levels are seen throughout all the shallow wells and most deep wells. The only sample that remained over the detected level during this particular event was the deep well in location 1 (MW1D). This parameter represents lighter petroleum hydrocarbons than TPH-DRO, also referred to as the semivolatile range.

The TPH-DRO results show increases and decreases confirming transmissivity or movement of product primarily along the shallow wells.

The corresponding Third Party Data Validation Report for these results is included at the end of this report (after the References). In addition, Monthly Groundwater Levels Measurements recorded during this period are included with Daily Activities Reports included in Section 2.0 as well as an updated copy of the Groundwater Levels Measurement Database in Section 3.0.

Caribbean Airport Facilities, Inc. - Subsurface Investigation Project

Tabulated Data received from: Advanced Environmental Laboratories, Inc.

Bimonthly Groundwater Sampling Results

				Analytical Parameters					
			Sampling Date *November 2015*	Total Petroleum Hydrocarbons- Gasoline Range Organics (TPH-GRO) C10-C28 microwave			Total Petroleum Hydrocarbons- Diesel Range Organics (TPH-DRO) C6-C10		
			Units	µg/L			µg/L		
	Lab Group Number	**Lab Sample #**	**Date Collected**	*Result*	*Method Detection Limit (MDL)*	*Limit of Quantitation (LOQ)*	*Dry Result*	*Method Detection Limit (MDL)*	*Limit of Quantitation (LOQ)*
Equipment Blank	1608570	8129675	11/10/2015	ND	20	50	330	30	94
MW11D-W01	1608570	8129676	11/10/2015	ND	20	50	110	30	95
MW11D-W01 MS	1608570	8129677	11/10/2015	1,200	20	50	1,200	30	95
MW11D-W01MSD	1608570	8129678	11/10/2015	1,300	20	50	1,300	30	94
MW11S-W01	1608570	8129679	11/10/2015	ND	20	50	610	30	95
MW10S-W01	1608570	8129680	11/10/2015	ND	20	50	ND	30	95
MW10S-W01 D	1608570	8129681	11/10/2015	ND	20	50	ND	31	95
MW10D-W01	1608570	8129682	11/10/2015	ND	20	50	77	30	95
MW6D-W01	1608570	8129683	11/10/2015	ND	20	50	110	30	95
MW6S-W01	1608570	8129684	11/10/2015	ND	20	50	-	-	-
Trip Blank	1608570	8129685	11/10/2015	ND	20	50	-	-	-
Field Blank	1608570	8129686	11/10/2015	ND	20	50	ND	30	94
MW3D-W01	1608570	8129687	11/10/2015	ND	20	50	92	30	95
MW3S-W01	1608570	8129688	11/10/2015	ND	20	50	68	30	95
MW9D-W01	1608570	8129689	11/10/2015	ND	20	50	470	30	95
MW9S-W01	1608570	8129690	11/10/2015	ND	20	50	620	30	94
MW7D-W01	1608570	8129691	11/10/2015	ND	20	50	720	30	95
MW7S-W01	1608570	8129692	11/10/2015	ND	20	50	190	30	94
MW7S-W01D	1608570	8129693	11/10/2015	ND	20	50	160	30	94
MW5D-W01	1608570	8129694	11/10/2015	ND	20	50	150	30	95
MW5S-W01	1608570	8129695	11/10/2015	ND	20	50	150	30	95

Caribbean Airport Facilities, Inc. - Subsurface Investigation Project

Tabulated Data received from: Advanced Environmental Laboratories, Inc.

Bimonthly Groundwater Sampling Results

				Analytical Parameters					
			Sampling Date *November 2015*	Total Petroleum Hydrocarbons- Gasoline Range Organics (TPH-GRO) C10-C28 microwave			Total Petroleum Hydrocarbons- Diesel Range Organics (TPH-DRO) C6-C10		
			Units	µg/L			µg/L		
	Lab Group Number	**Lab Sample #**	**Date Collected**	*Result*	*Method Detection Limit (MDL)*	*Limit of Quantitation (LOQ)*	*Result*	*Method Detection Limit (MDL)*	*Limit of Quantitation (LOQ)*
Equipment Blank	1608983	8132042	11/11/2015	ND	20	50	120	31	95
MW4D-W01	1608983	8132043	11/11/2015	ND	20	50	84	30	95
MW4D-W01 MS	1608983	8132044	11/11/2015	1,300	20	50	1,300	30	94
MW4D-W01 MSD	1608983	8132045	11/11/2015	1,300	20	50	1,000	30	95
MW4S-W01	1608983	8132046	11/11/2015	ND	100	250	3,500	30	94
Trip Blank	1608983	8132047	11/11/2015	ND	20	50	-	-	-
Field Blank	1608983	8132048	11/11/2015	ND	20	50	ND	30	95
MW2D-W01	1608983	8132049	11/11/2015	ND	100	250	92	30	95
MW2S-W01	1608983	8132050	11/11/2015	ND	100	250	630	30	94
MW1D-W01	1608983	8132051	11/11/2015	47	20	50	67	30	94
MW1S-W01	1608983	8132052	11/11/2015	ND	100	250	160	30	95
MW8D-W01	1608983	8132053	11/11/2015	ND	100	250	240	30	95
MW8S-W01	1608983	8132054	11/11/2015	ND	20	50	57	30	95

Caribbean Airport Facilities, Inc.
Subsurface Investigation Project

Data Comparison Tables. Tabulated Data received from: Advanced Environmental Laboratories, Inc.

TPH-GRO

Shallow Wells	TREND	May-15	Sep-15	Nov-15	Jan-16	Mar-16	May-16
MW1-S		2100	ND	ND			
MW2-S		770	ND	ND			
MW3-S		610	ND	ND			
MW4-S		5300	ND	ND			
MW5-S		76	ND	ND			
MW6-S		990	ND	ND			
MW7-S		210	ND	ND			
MW8-S		270	ND	ND			
MW9-S		940	ND	ND			
MW10-S		210	ND	ND			
MW11-S		ND	ND	ND			
Max Result TPH-GRO		**5300**	**ND**	**ND**			

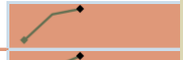
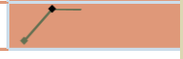
TPH-GRO

Deep Wells	TREND	May-15	Sep-15	Nov-15	Jan-16	Mar-16	May-16
MW1-D		240	26	47			
MW2-D		360	25	ND			
MW3-D		410	ND	ND			
MW4-D		860	ND	ND			
MW5-D		140	24	ND			
MW6-D		390	23	ND			
MW7-D		ND	ND	ND			
MW8-D		540	ND	ND			
MW9-D		760	ND	ND			
MW10-D		89	ND	ND			
MW11-D		270	ND	ND			
Max Result TPH-GRO		**860**	**26**	**47**			

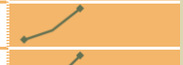
Caribbean Airport Facilities, Inc.
Subsurface Investigation Project

Data Comparison Tables. Tabulated Data received from: Advanced Environmental Laboratories, Inc.

TPH-DRO

Shallow Wells	TREND	May-15	Sep-15	Nov-15	Jan-16	Mar-16	May-16
MW1-S		50	140	160			
MW2-S		43	410	630			
MW3-S		ND	48	68			
MW4-S		35	3600	3500			
MW5-S		28	67	150			
MW6-S		140	270	-			
MW7-S		58	410	190			
MW8-S		ND	ND	57			
MW9-S		24	400	620			
MW10-S		ND	ND	ND			
MW11-S		ND	620	610			
Max Result TPH-DRO		**140**	**3600**	**3500**			

TPH-DRO

Deep Wells	TREND	May-15	Sep-15	Nov-15	Jan-16	Mar-16	May-16
MW1-D		20	41	67			
MW2-D		33	75	92			
MW3-D		ND	62	92			
MW4-D		30	36	84			
MW5-D		ND	-	150			
MW6-D		75	95	110			
MW7-D		ND	570	720			
MW8-D		40	100	240			
MW9-D		160	200	470			
MW10-D		ND	47	77			
MW11-D		ND	31	110			
Max Result TPH-DRO		**160**	**570**	**720**			

Fourth Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marin International Airport (LMMIA)

2.0 DAILY ACTIVITIES REPORTS

The following reports include relevant daily notes documented by the "CHES Services Corp. Team". Historical weather data has been included for up to two (2) days prior to the groundwater level readings event, as provided by Weather Underground [1].

Weather Station ID: ISANJUAN16

In addition, observed water levels reported by NOAA's Center for Operational Oceanographic Products and Services (CO-OPS) [2].

NOAA/NOS/CO-OPS Station - San Juan, PR - Station ID: 9755371

Established:	Mar 04, 1962
Time Meridian:	60° W
Present Installation:	Mar 25, 1989
Date Removed:	N/A
Water Level Max (ref MHHW):	2.77 Sep 18, 1989
Water Level Min (ref MLLW):	-1.09 Dec 20, 1968
Mean Range:	1.1 ft.
Diurnal Range:	1.58 ft.

Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	**Date:**	November 10, 2015

Phone:	787-751-7810	**CHES Representative:**	HRM/NDM/DP

Time	Location	Activity / Observations
8:20	MW11	Arrived for sampling at location 11
9:17	MW10	Arrived for sampling at location 10
10:04	MW6	Arrived for sampling at location 6
10:30	MW6	Done
10:33	MW3	Arrived at location 3 for sampling
10:37	MW3	Paused due to rain
10:45	MW3	Work began at location 3
11:30	CAF1	Lunch
13:00	MW7	Arrived for sampling at location 7
13:43	MW5	Arrived at location 5 for sampling
14:16	MW9	Arrived for sampling at location 9
15:00	MW9	Done at location 9; J&S personnel checked out
15:10	CAF1	Prepping coolers
17:45	CAF1	CHES Personnel Checked out

Moving Forward (Next Steps)

Action Item	Deadline	%Completion	Responsible Party
N/A	N/A	N/A	N/A

Weather History

Two (2) days prior to GW Level Monitoring event

Sunday, November 8, 2015

« Previous Day | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	28 °C	27 °C	
Max Temperature	31 °C	31 °C	32 °C (1962)
Min Temperature	24 °C	24 °C	20 °C (1959)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days	0	0	
Since 1 July heating degree days	0	0	
Cooling Degree Days	17	16	
Month to date cooling degree days	132	131	
Year to date cooling degree days	5406	5090	
Growing Degree Days	32 (Base 50)		
Moisture			
Dew Point	24 °C		
Average Humidity	77		
Maximum Humidity	91		
Minimum Humidity	63		
Precipitation			
Precipitation	0.76 mm	5.59 mm	9.73 mm (1952)
Month to date precipitation	3.87	1.79	
Year to date precipitation	33.01	46.77	

Ref: Weather Underground

Special Comments

N/A

Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	**Date:**	November 10, 2015

Weather History

One (1) day prior to GW Level Monitoring event

Special Comments

N/A

Monday, November 9, 2015

« Previous Day | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	28 °C	27 °C	
Max Temperature	31 °C	31 °C	32 °C (1997)
Min Temperature	25 °C	24 °C	18 °C (1898)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days	0	0	
Since 1 July heating degree days	0	0	
Cooling Degree Days	18	16	
Month to date cooling degree days	150	147	
Year to date cooling degree days	5424	5106	
Growing Degree Days	32 (Base 50)		
Moisture			
Dew Point	23 °C		
Average Humidity	75		
Maximum Humidity	91		
Minimum Humidity	59		
Precipitation			
Precipitation	5.33 mm	5.84 mm	7.87 mm (2009)
Month to date precipitation	4.08	2.02	
Year to date precipitation	33.22	47.00	

Ref: Weather Underground

Weather History

Day of GW Level Monitoring event

Special Comments

Some mid-morning rain; no major delay or quality control procedure breach to report.

Tuesday, November 10, 2015

« Previous Day | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	28 °C	27 °C	
Max Temperature	31 °C	30 °C	32 °C (1990)
Min Temperature	24 °C	24 °C	20 °C (1964)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days	0	0	
Since 1 July heating degree days	0	0	
Cooling Degree Days	17	16	
Month to date cooling degree days	167	163	
Year to date cooling degree days	5441	5122	
Growing Degree Days	32 (Base 50)		
Moisture			
Dew Point	24 °C		
Average Humidity	79		
Maximum Humidity	94		
Minimum Humidity	63		
Precipitation			
Precipitation	36.58 mm	5.59 mm	6.17 mm (1927)
Month to date precipitation	5.52	2.24	
Year to date precipitation	34.66	47.22	

Ref: Weather Underground

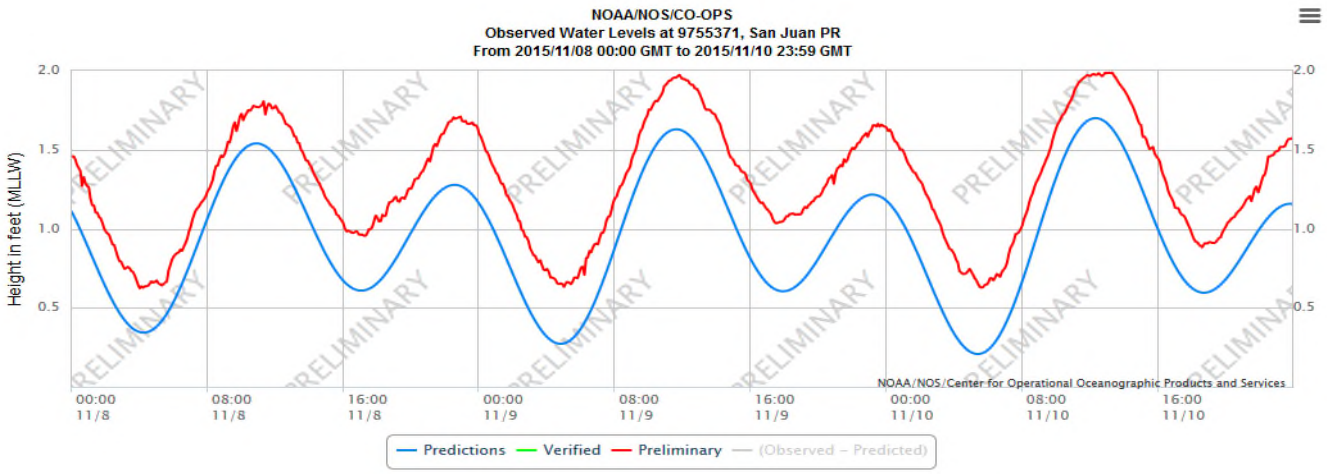
Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

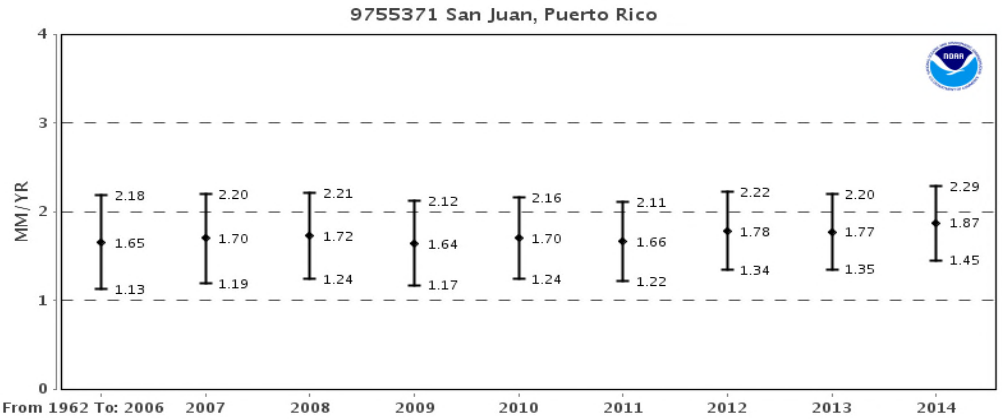
Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	**Date:**	November 10, 2015

Water Levels

Two (2) days prior to GW Level Monitoring event until day of event



Previous Mean Water Level Trends



Ref: National Oceanic and Atmospheric Administration

Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	**Date:**	November 11, 2015

Phone:	787-751-7810	**CHES Representative:**	HRM/NDM/DP

Time	**Location**	**Activity / Observations**
6:15	CAF1	CHES team working on setting up for the day
7:00	MW4	Arrived for sampling at location 4
7:46	MW2	Arrived for sampling at location 2
8:29	MW1	Arrived for sampling at location 1
9:10	MW8	Arrived at location 8 & preparing for sampling
12:00	CAF1	Done shipping samples.

Moving Forward (Next Steps)

Action Item	**Deadline**	**%Completion**	**Responsible Party**
N/A	N/A	N/A	N/A

Weather History

Two (2) days prior to GW Level Monitoring event

Monday, November 9, 2015

« Previous Day Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	28 °C	27 °C	
Max Temperature	31 °C	31 °C	32 °C (1997)
Min Temperature	25 °C	24 °C	18 °C (1898)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days	0	0	
Since 1 July heating degree days	0	0	
Cooling Degree Days	18	16	
Month to date cooling degree days	150	147	
Year to date cooling degree days	5424	5106	
Growing Degree Days	32 (Base 50)		
Moisture			
Dew Point	23 °C		
Average Humidity	75		
Maximum Humidity	91		
Minimum Humidity	59		
Precipitation			
Precipitation	5.33 mm	5.84 mm	7.87 mm (2009)
Month to date precipitation	4.08	2.02	
Year to date precipitation	33.22	47.00	

Special Comments

N/A

Ref: Weather Underground

Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	**Date:**	November 11, 2015

Weather History

One (1) day prior to GW Level Monitoring event

Special Comments

N/A

Tuesday, November 10, 2015

« Previous Day | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	28 °C	27 °C	
Max Temperature	31 °C	30 °C	32 °C (1990)
Min Temperature	24 °C	24 °C	20 °C (1964)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days	0	0	
Since 1 July heating degree days	0	0	
Cooling Degree Days	17	16	
Month to date cooling degree days	167	163	
Year to date cooling degree days	5441	5122	
Growing Degree Days	32 (Base 50)		
Moisture			
Dew Point	24 °C		
Average Humidity	79		
Maximum Humidity	94		
Minimum Humidity	63		
Precipitation			
Precipitation	36.58 mm	5.59 mm	6.17 mm (1927)
Month to date precipitation	5.52	2.24	
Year to date precipitation	34.66	47.22	

Ref: Weather Underground

Weather History

Day of GW Level Monitoring event

Special Comments

N/A

Wednesday, November 11, 2015

« Previous Day | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	28 °C	27 °C	
Max Temperature	31 °C	30 °C	32 °C (1974)
Min Temperature	24 °C	24 °C	19 °C (1919)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days	0	0	
Since 1 July heating degree days	0	0	
Cooling Degree Days	17	16	
Month to date cooling degree days	184	179	
Year to date cooling degree days	5458	5138	
Growing Degree Days	31 (Base 50)		
Moisture			
Dew Point	23 °C		
Average Humidity	82		
Maximum Humidity	94		
Minimum Humidity	70		
Precipitation			
Precipitation	T mm	5.84 mm	20.12 mm (1931)
Month to date precipitation	5.52	2.47	
Year to date precipitation	34.66	47.45	

Ref: Weather Underground

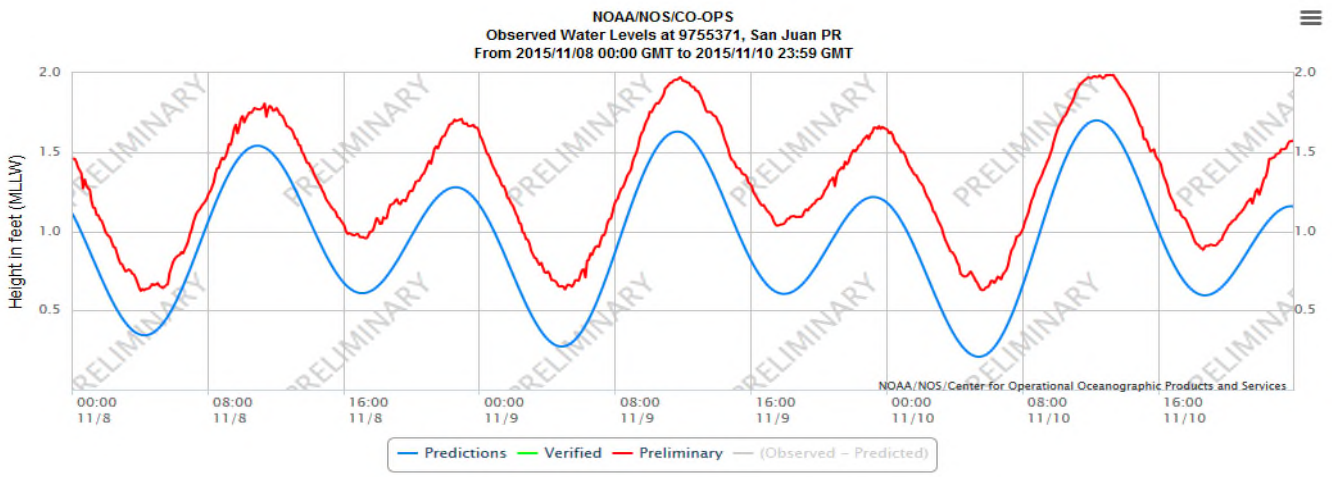
Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

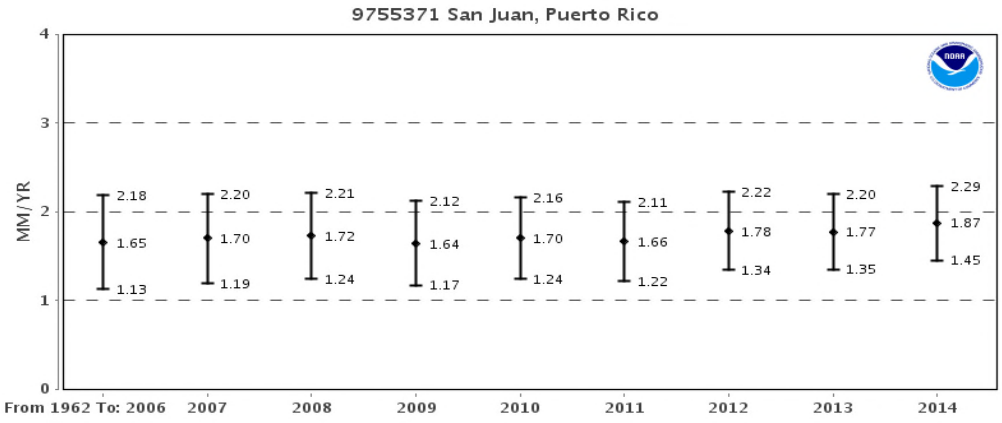
Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	**Date:**	November 11, 2015

Water Levels

Two (2) days prior to GW Level Monitoring event until day of event



Previous Mean Water Level Trends



Ref: National Oceanic and Atmospheric Administration

Daily Activities

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associate:
Chemical/Environmental Engineering & Industrial Hygiene Consultant:
www.flraches.com

Project:	CAF Groundwater Monitoring Wells		
Address:	LMMIA	**Date:**	November-15

Weather History

Climatological Data for SAN JUAN L M MARIN AP, PR - November 2015

Click column heading to sort ascending, click again to sort descending.

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2015-11-01	87	74	80.5	-1.2	0	16	1.78	0.0	0
2015-11-02	88	74	81.0	-0.6	0	16	0.44	0.0	0
2015-11-03	84	77	80.5	-1.0	0	16	0.86	0.0	0
2015-11-04	87	76	81.5	0.0	0	17	0.06	0.0	0
2015-11-05	88	77	82.5	1.1	0	18	0.18	0.0	0
2015-11-06	87	76	81.5	0.2	0	17	0.02	0.0	0
2015-11-07	85	75	80.0	-1.2	0	15	0.50	0.0	0
2015-11-08	88	76	82.0	0.9	0	17	0.03	0.0	0
2015-11-09	88	77	82.5	1.4	0	18	0.21	0.0	0
2015-11-10	88	75	81.5	0.5	0	17	1.44	0.0	0
2015-11-11	87	76	81.5	0.6	0	17	T	0.0	0
2015-11-12	87	77	82.0	1.2	0	17	T	0.0	0
2015-11-13	88	77	82.5	1.8	0	18	0.01	0.0	0
2015-11-14	87	77	82.0	1.4	0	17	0.02	0.0	0
2015-11-15	88	76	82.0	1.4	0	17	0.01	0.0	0
2015-11-16	87	77	82.0	1.5	0	17	0.97	0.0	0
2015-11-17	88	75	81.5	1.1	0	17	0.22	0.0	0
2015-11-18	88	77	82.5	2.2	0	18	0.03	0.0	0
2015-11-19	86	75	80.5	0.3	0	16	0.14	0.0	0
2015-11-20	85	75	80.0	-0.2	0	15	0.03	0.0	0
2015-11-21	83	73	78.0	-2.1	0	13	0.06	0.0	0
2015-11-22	85	73	79.0	-1.0	0	14	0.03	0.0	0
2015-11-23	89	75	82.0	2.1	0	17	0.00	0.0	0
2015-11-24	90	76	83.0	3.1	0	18	0.00	0.0	0
2015-11-25	87	75	81.0	1.2	0	16	0.01	0.0	0
2015-11-26	85	75	80.0	0.3	0	15	0.29	0.0	0
2015-11-27	90	76	83.0	3.3	0	18	0.00	0.0	0
2015-11-28	84	75	79.5	-0.1	0	15	1.06	0.0	0
2015-11-29	84	72	78.0	-1.5	0	13	0.31	0.0	0
2015-11-30	86	76	81.0	1.5	0	16	0.01	0.0	0
Sum	2604	2265	-	-	0	491	8.72	0.0	-
Average	86.8	75.5	81.2	0.6	-	-	-	-	0.0
Normal	85.9	75.2	80.6	-	0	466	6.35	0.0	-

Ref: NOAA NWSF; NOWData - NOAA Online Weather Dat; San Juan LMMIA Statio

Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	**Date:**	December 17, 2015

Phone:	787-751-7810	**CHES Representative:**	NDM

Time	Location	Activity / Observations
7:30	CAF1	CHES representative arrived
8:25	CAF1	J&S personnel arrived
8:42	MW5	Arrived for levels readings.
8:49	MW5	Done
8:50	MW7	Arrived for levels readings.
8:56	MW7	Done
8:57	MW9	Arrived for levels readings and the wells are blocked with UPS car.
9:16	MW9	Done
9:17	MW10	Arrived for levels readings.
9:21	MW10	Done
9:23	MW11	Arrived for levels readings.
9:29	MW11	Done
9:33	MW6	Arrived for levels readings.
9:37	MW6	Done
9:38	MW3	Arrived for levels readings.
9:43	MW3	Done
9:48	MW1	Arrived for levels readings.
9:52	MW1	Done
9:53	MW4	Arrived for levels readings.
9:56	MW4	Done
9:58	MW2	Arrived for levels readings.
10:02	MW2	Done
10:05	MW8	Arrived for levels readings.
10:08	MW8	Done
10:20	CAF1	CHES and J&S Personnel Checked out

Moving Forward (Next Steps)

Action Item	Deadline	%Completion	Responsible Party
N/A	N/A	N/A	N/A

Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	**Date:**	December 17, 2015

Weather History

Two (2) days prior to GW Level Monitoring event

Special Comments

N/A

Tuesday, December 15, 2015

« Previous Day | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	27 °C	26 °C	
Max Temperature	29 °C	29 °C	32 °C (1997)
Min Temperature	24 °C	23 °C	19 °C (1906)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days	0	0	
Since 1 July heating degree days	0	0	
Cooling Degree Days	15	14	
Month to date cooling degree days	237	210	
Year to date cooling degree days	6002	5636	
Growing Degree Days	30 (Base 50)		
Moisture			
Dew Point	21 °C		
Average Humidity	69		
Maximum Humidity	82		
Minimum Humidity	55		
Precipitation			
Precipitation	0.00 mm	4.32 mm	8.33 mm (1934)
Month to date precipitation	2.09	2.54	
Year to date precipitation	39.92	53.87	

Ref: Weather Underground

Weather History

One (1) day prior to GW Level Monitoring event

Special Comments

N/A

Wednesday, December 16, 2015

« Previous Day | Next Day »

Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	27 °C	26 °C	
Max Temperature	31 °C	29 °C	32 °C (1980)
Min Temperature	24 °C	23 °C	18 °C (1964)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days	0	0	
Since 1 July heating degree days	0	0	
Cooling Degree Days	16	14	
Month to date cooling degree days	253	224	
Year to date cooling degree days	6018	5650	
Growing Degree Days	31 (Base 50)		
Moisture			
Dew Point	21 °C		
Average Humidity	64		
Maximum Humidity	82		
Minimum Humidity	46		
Precipitation			
Precipitation	0.00 mm	4.06 mm	9.70 mm (2014)
Month to date precipitation	2.09	2.70	
Year to date precipitation	39.92	54.03	

Ref: Weather Underground

Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	**Date:**	December 17, 2015

Weather History

Day of GW Level Monitoring event

Special Comments

N/A

Thursday, December 17, 2015

« Previous Day Next Day »

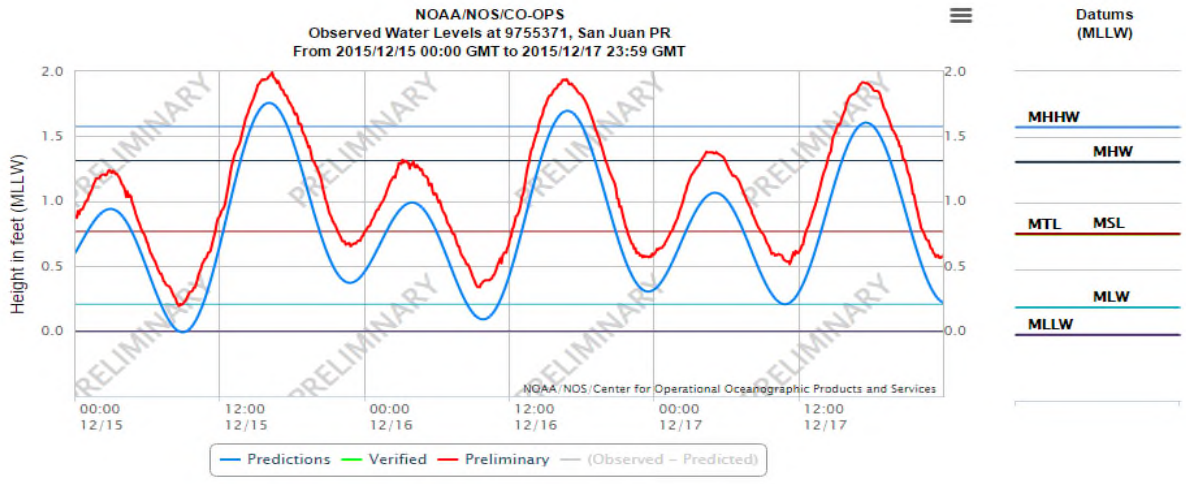
Daily | Weekly | Monthly | Custom

	Actual	Average	Record
Temperature			
Mean Temperature	25 °C	26 °C	
Max Temperature	28 °C	29 °C	32 °C (1987)
Min Temperature	23 °C	23 °C	18 °C (1916)
Degree Days			
Heating Degree Days	0	0	
Month to date heating degree days		0	
Since 1 July heating degree days		0	
Cooling Degree Days	12	14	
Month to date cooling degree days		238	
Year to date cooling degree days		5664	
Growing Degree Days	27 (Base 50)		
Moisture			
Dew Point	21 °C		
Average Humidity	77		
Maximum Humidity	85		
Minimum Humidity	61		
Precipitation			
Precipitation	0.0 mm	4.06 mm	3.20 mm (1948)
Month to date precipitation		2.86	
Year to date precipitation		54.19	

Ref: Weather Underground

Water Levels

Two (2) days prior to GW Level Monitoring event until day of event

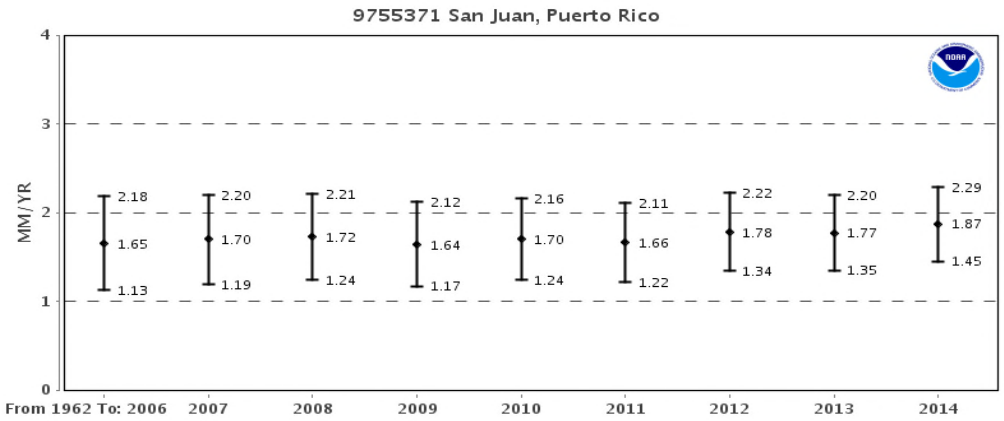


Daily Activities Report

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
www.flraches.com

Project:	CAF MW Weekly Groundwater levels reading		
Address:	LMMIA	**Date:**	December 17, 2015

Previous Mean Water Level Trends



Ref: National Oceanic and Atmospheric Administration

Daily Activities

Prepared by: CHES Services Corp. d/b/a: Fernando L. Rodríguez, PE & Associate:
Chemical/Environmental Engineering & Industrial Hygiene Consultant:
www.flraches.com

Project:	CAF Groundwater Monitoring Wells		
Address:	LMMIA	**Date:**	December-15

Weather History

Climatological Data for SAN JUAN L M MARIN AP, PR - December 2015

Click column heading to sort ascending, click again to sort descending.

Date	Temperature				HDD	CDD	Precipitation	New Snow	Snow Depth
	Maximum	Minimum	Average	Departure					
2015-12-01	86	76	81.0	1.6	0	16	0.45	M	M
2015-12-02	88	76	82.0	2.6	0	17	0.01	M	M
2015-12-03	87	77	82.0	2.7	0	17	0.01	M	M
2015-12-04	86	76	81.0	1.8	0	16	0.02	M	M
2015-12-05	86	77	81.5	2.3	0	17	0.02	M	M
2015-12-06	84	74	79.0	-0.1	0	14	0.16	M	M
2015-12-07	83	75	79.0	-0.1	0	14	1.41	M	M
2015-12-08	86	74	80.0	1.0	0	15	0.01	M	M
2015-12-09	88	75	81.5	2.5	0	17	0.00	M	M
2015-12-10	88	74	81.0	2.1	0	16	0.00	M	M
2015-12-11	87	74	80.5	1.6	0	16	T	M	M
2015-12-12	87	74	80.5	1.7	0	16	T	M	M
2015-12-13	86	74	80.0	1.2	0	15	0.00	M	M
2015-12-14	86	76	81.0	2.3	0	16	0.00	M	M
2015-12-15	85	75	80.0	1.3	0	15	0.00	0.0	0
2015-12-16	87	75	81.0	2.4	0	16	0.00	0.0	0
2015-12-17	86	74	80.0	1.4	0	15	0.05	0.0	0
2015-12-18	86	74	80.0	1.5	0	15	T	0.0	0
2015-12-19	85	74	79.5	1.0	0	15	0.05	0.0	0
2015-12-20	83	74	78.5	0.1	0	14	0.14	0.0	0
2015-12-21	86	75	80.5	2.1	0	16	0.07	0.0	0
2015-12-22	84	75	79.5	1.1	0	15	0.07	0.0	0
2015-12-23	85	76	80.5	2.2	0	16	0.02	0.0	0
2015-12-24	85	76	80.5	2.2	0	16	0.11	0.0	0
2015-12-25	84	75	79.5	1.3	0	15	0.18	0.0	0
2015-12-26	84	74	79.0	0.8	0	14	0.12	0.0	0
2015-12-27	84	73	78.5	0.4	0	14	0.07	0.0	0
2015-12-28	83	73	78.0	-0.1	0	13	0.17	0.0	0
2015-12-29	84	74	79.0	0.9	0	14	0.01	0.0	0
2015-12-30	83	74	78.5	0.5	0	14	0.23	0.0	0
2015-12-31	84	72	78.0	0.0	0	13	0.09	0.0	0
Sum	2646	2315	-	-	0	472	3.47	0.0	-
Average	85.4	74.7	80.0	1.3	-	-	-	-	0.0
Normal	83.9	73.4	78.7	-	0	423	5.02	0.0	-

Ref: NOAA NWSF; NOWData - NOAA Online Weather Dat; San Juan LMMIA Statio

Fourth Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marin International Airport (LMMIA)

3.0 GROUNDWATER LEVELS DATABASE

The following groundwater levels database includes data corresponding to the twenty-two (22) wells installed at the LMMIA.

Fernando L. Rodríguez, P.E. & Associates
Chemical/Environmental Engineering & Industrial Hygiene Consultants
PO BOX 193430 San Juan, PR 00919-3430
Tel.: 787-751-7810 | Fax: 787-751-8988 | flrodriguez@flraches.com | www.flraches.com

Groundwater Monitoring Wells Construction and Sampling Project

GW Level Readings

GW Level Monitoring Start: May 18, 2015 GW Level Readings To-Date: December 17, 2015

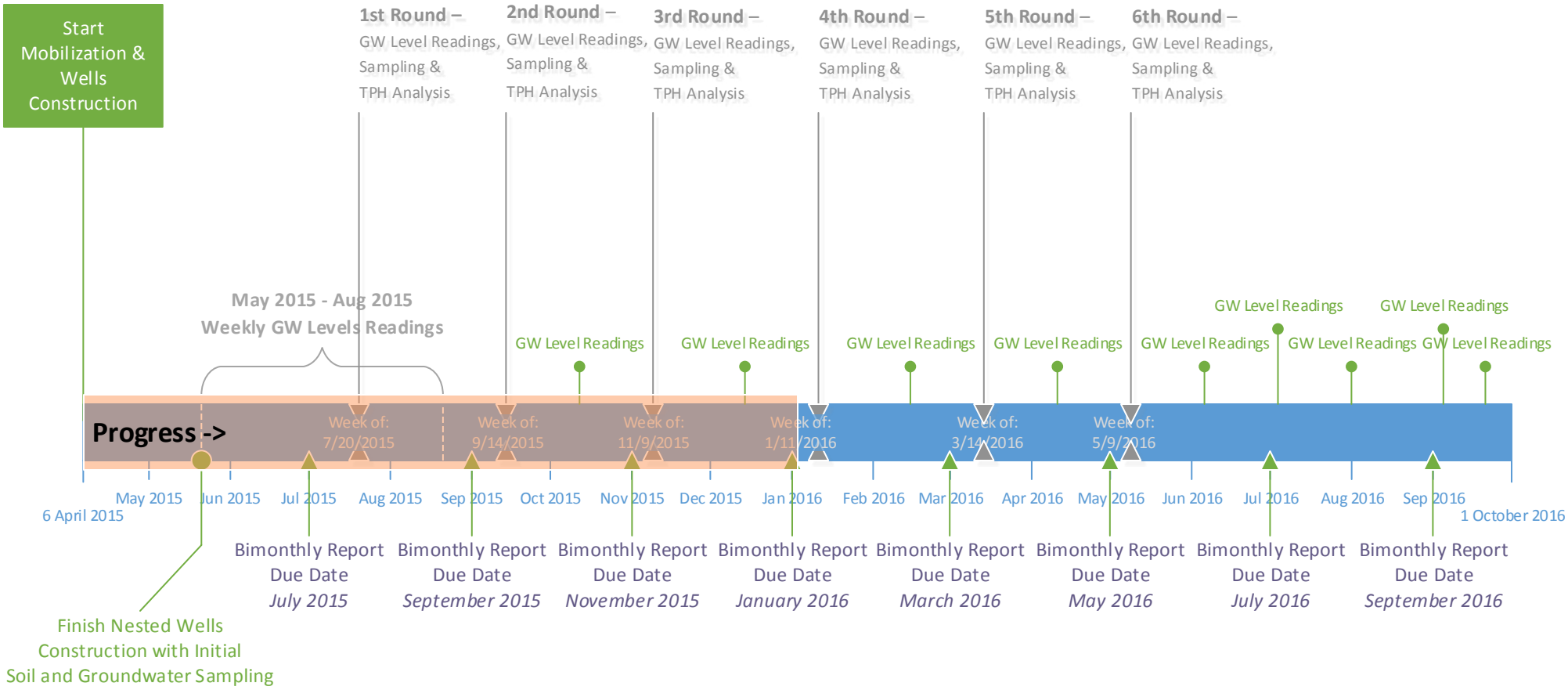
	Well ID	MW1S	MW1D	MW2S	MW2D	MW3S	MW3D	MW4S	MW4D	MW5S	MW5D	MW6S	MW6D	MW7S	MW7D	MW8S	MW8D	MW9S	MW9D	MW10S	MW10D	MW11S	MW11D
	Well depth	10'	20.5'	10'	20'	10'	20'	10'	20' 5"	10'	20'	10'	20.5'	10'	20.5'	10'	20.5'	10'	20.5'	10'	20.5'	10'	23.5'
Week of	Date																						
May 18, 2015	May 18, 2015	6' 3"	6' 4"	4' 7"	4' 4"	-	-	3' 5"	2' 8"	6' 9"	8' 6"	-	-	-	-	-	-	-	-	-	-	-	-
May 18, 2015	May 19, 2015	-	-	-	-	-	-	-	-	-	-	6' 3"	6' 4"	6'	6' 6"	-	-	6'	13'	6' 9"	6' 9"	6' 3"	9'
May 18, 2015	May 20, 2015	-	-	-	-	6'4"	6'5"	-	-	-	-	-	-	-	-	2'8"	3'	7'	7'7"	-	-	7'4"	7'4"
May 25, 2015	May 28, 2015	6'	6'	4'1"	4'	6'5"	6'6"	2'11"	2'11"	NR	6'10"	5'10"	6'6"	5'11"	6'11"	3'	3'1"	6'11"	7'2"	6'6"	6'8"	7'2"	7'
June 1, 2015	June 4, 2015	6' 3"	6' 5"	4'	3' 6"	6' 3"	6' 2"	3'	3'	6'	6' 8"	5' 6"	6'	5' 8"	6' 1"	2' 8"	2' 2"	5' 6"	7'	6' 3"	6' 3"	6' 7"	7'
June 8, 2015	June 11, 2015	5' 9"	5' 11"	4' 1"	3' 10"	7'	7'	3'	3' 3"	6' 11"	7' 1"	6' 3"	6' 6"	6' 1"	4' 3"	2' 11"	3' 6"	6' 6"	7' 1"	7'	6' 10"	7' 3"	7' 6"
June 15, 2015	June 18, 2015	-	-	4'	3' 6"	-	-	3' 2"	2' 11"	-	-	-	-	-	-	-	-	-	-	-	-	-	-
June 15, 2015	June 19, 2015	5' 10"	5' 7"	-	-	6' 4"	6' 3"	-	-	6' 11"	6' 5"	5' 6"	6'	5' 7"	4' 1"	2' 11"	3'	5' 11"	6' 6"	6' 4"	6' 4"	7'	7'
June 22, 2015	June 25, 2015	6'	6' 4"	4' 4"	4' 1"	6' 9"	6' 10"	3' 4"	3' 3"	6' 9"	6' 11"	6' 2"	6' 4"	6' 1"	5'	3'	3' 4"	5' 10"	6' 7"	6' 10"	6' 9"	7' 6"	7' 5"
June 29, 2015	July 2, 2015	5' 11"	6' 3"	4' 4"	4' 1"	6' 7"	6' 9"	3' 3"	3' 2"	6' 9"	6' 11"	6' 2"	6' 5"	6' 1"	6' 4"	3'	3' 4"	5' 10"	6' 6"	6' 8"	6' 8"	7' 2"	7' 3"
July 6, 2015	July 9, 2015	5' 10"	6' 3"	4' 3"	4'	6' 8"	6' 9"	3' 4"	3' 2"	6' 8"	6' 10"	6' 2"	6' 4"	6' 1"	6' 3"	3'	3' 4"	5' 10"	6' 4"	6' 8"	6' 8"	7' 7"	7' 4"
July 13, 2015	July 16, 2015	6'	6' 2"	4' 2"	3' 11"	6' 6"	6' 8"	3' 3"	3' 2"	6' 8"	6' 10"	6' 2"	6' 4"	6' 1"	6' 4"	2' 11"	3' 3"	6' 3"	6' 5"	6' 7"	6' 7"	7'	7' 3"
July 20, 2015	July 21, 2015	-	-	-	-	6' 7"	6' 9"	-	-	6' 7"	6' 10"	6' 1"	6' 4"	6'	6' 4"	-	-	6' 2"	6' 7"	6' 7"	6' 7"	7' 3"	7' 4"
July 20, 2015	July 22, 2015	6'	6' 4"	4' 2"	4'	-	-	3' 4"	3' 2"	-	-	-	-	-	-	3'	3' 3"	-	-	-	-	-	-
July 27, 2015	July 30, 2015	6'	6' 2"	4' 4"	4'	6' 7"	6' 8"	3' 4"	3' 1"	6' 8"	6' 8"	6' 2"	6' 3"	6'	7' 7"	3' 1"	3' 5"	6' 1"	6' 3"	6' 7"	6' 7"	7' 8"	7' 6"
August 3, 2015	August 6, 2015	6' 1"	6' 2"	4' 2"	4'	6' 8"	6' 9"	3' 4"	3' 2"	6' 7"	6' 10"	6' 5"	6' 4"	6' 2"	7' 3"	3' 1"	3' 4"	6' 10"	6' 2"	6' 8"	6' 10"	7' 9"	7' 7"
August 10, 2015	August 12, 2015	6'1"	6'1"	4' 2"	3'9"	6'6"	6'7"	3'	3'	6'7"	6'9"	6'7"	6'1"	6'	6'2"	3'	3'2"	5'9"	6'2"	6'6"	6'6"	7'6"	7'6"
August 17, 2015	August 20, 2015	6'	5' 10"	3' 10"	4' 1"	6' 8"	6' 7"	3'	3' 1"	6' 7"	6' 8"	6' 1"	6' 1"	5' 11"	6' 2"	2' 10"	3'	5' 6"	6'	6' 3"	6' 4"	6' 8"	6' 11"
August 24, 2015	August 27, 2015	6'	6'	4'1"	3'9"	6'5"	6'6"	3'	2'11"	6'5"	6'8"	6'	6'1"	5'10"	6'	2'7"	3'	5'5"	5'9"	6'2"	6'3"	6'5"	6'8"
September 14, 2015	September 15, 2015	-	-	-	-	6'2"	6'5"	-	-	6'5"	6'7"	-	-	-	-	2'9"	2'11"	5'6"	5'7"	6'3"	6'1"	6'7"	6'8"
September 14, 2015	September 16, 2015	6'	6'	4'0"	3'9"	-	-	3'1"	3'	-	-	5'9"	6'	5'9"	6'	-	-	-	-	-	-	-	-
October 12, 2015	October 15, 2015	5'10"	511"	4'1"	3'10"	6'6"	6'5"	3'1"	3'	6'6"	6'7"	5'11"	6'1"	5'10"	6'2"	2'10"	3'1"	5'9"	5'10"	6'5"	6'4"	7'2"	7'1"
November 9, 2015	November 10, 2015	-	-	-	-	6'3"	6'2"	-	-	6'6"	6'6"	5'1"	5'10"	5'8"	6'1"	-	-	5'	6'1"	5'10"	5'9"	4'2"	5'10"
November 9, 2015	November 11, 2015	5'7"	5'10"	3'2"	3'6"	-	-	2'11"	3'	-	-	-	-	-	-	-	-	-	-	-	-	-	-
December 14, 2015	December 17, 2015	5'9"	6'1"	4'1"	3'10"	6'6"	6'6"	3'1"	3'4"	6'3"	7'1"	5'1"	6'	5'8"	9'11"	2'8"	3'10"	5'3"	5'3"	6'3"	6'4"	6'7"	6'6"

Fourth Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marin International Airport (LMMIA)

4.0 PROJECT PROGRESS AND/OR PROPOSED SCHEDULE

The following pages provide project progress details and an updated proposed schedule for the tasks agreed upon with U.S. EPA.



Rev.: June 3, 2015

TITLE

Caribbean Airport Facilities, Inc.
LMMIA, Carolina, PR
Eleven (11) Nested Groundwater Monitoring Wells Construction with Bimonthly Sampling/Analysis Timeline

Notes:

1. During the months of April and May 2015, groundwater (GW) and soil samples were collected at each one of the nested wells as they were constructed.
2. The following 3-month period, on a weekly basis, GW levels (shallow and deep) are being logged, and monthly thereafter.
3. After the initial sampling, the nested wells are to be sampled and samples to be analyzed for TPH analysis by the designated laboratory on a bimonthly basis (every 2 months) for the first year.

M. LaReau (EPA): After sampling and water level measurements have commenced, CAF can make a recommendation based on the data to alter this schedule. At that time, EPA will review all documents presented to determine if a change is warranted.

Fourth Bimonthly Report

Groundwater Monitoring Wells at the Luis Muñoz Marin International Airport (LMMIA)

5.0 REFERENCES

1 Weather Underground. Historical Weather. [Internet]. 2015 Available from: http://www.wunderground.com/history/.

2 Center for Operational Oceanographic Products and Services. Observed Tides/Water Levels at 9755371, San Juan, PR. [Internet]. Available from: http://tidesandcurrents.noaa.gov/waterlevels.html.

DATA VALIDATION REPORT FOR THE NOVEMBER, 2015 DATA COLLECTION EVENTS PERFORMED AT

CAF GW Monitoring Well Construction Project
(Bimonthly Sampling)

Prepared for

Eng. Fernando Rodríguez
Fernando L. Rodríguez, P.E. & Associates

November, 2015

Prepared by

Rafael Infante
Environmental Consultant
Chemist License 1888

TABLE OF CONTENT

INTRODUCTION

The purpose of the independent data validation process for the Caribbean Airport Facility (CAF) GW well construction project is to assess the effect of the overall analytical process on the usability of the data. The validation process includes the verification and interpretation of analytical data, which provides the end user with a more complete understanding of the quality and defensibility of the laboratory data. The two major categories of data evaluation are laboratory performance and matrix interferences. Evaluation of laboratory performance is a check for compliance with the analytical methods and regulatory requirements; either the laboratory did, or did not, analyze the samples within the limits of the established analytical method. Evaluation of matrix interferences is more subtle and involves the analysis of several areas of results including surrogate spike recoveries, matrix spike recoveries, and reproducibility of duplicate sample results.

After the final analytical results were released by the laboratory, both the sample and QC data were carefully reviewed to verify sample identity, instrument calibration, detection limits, dilution factors, numerical computations, accuracy of transcriptions, and chemical interpretations. Additionally, the QC data were reviewed to ascertain whether they were within the laboratory-defined limits for accuracy and precision. Any non-conforming data were discussed in the laboratory's data package case narrative. Additional non-conforming (qualified or rejected data) form part of this report.

The sample results were assessed according to USEPA data validation guidance documents:

- USEPA Region 2, SOP HW-24, Standard Operating Procedure for the Validation of Organic Data Acquired using SW-846 Method 8260B (August, 2009-Revision 2), the USEPA National Functional Guidelines for Low/Medium Concentration Organic Data Review (SOW SOM01.2 SOP HW-33, August 2009 – Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August, 2009-Revision 3) is used as a primary guidance document. Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8021B are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

- Data Validation Standard Operating Procedure for Organic Analysis of Low/Medium Concentration Semivolatile Acquired using SW-846 Method 8270C (SOW SOM01.2-SOP HW-35, August 2009 –Revision 1); Validation Semivolatile Organic Compounds by SW846 8270 (SOP HW-22, August, 2009 – Revision 4). Also, the QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8015C are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

Sample copies of the Data Review Worksheets utilized for the validation process are included in Appendix A. Completed data validation checklist and raw data are kept on our files.
The following USEPA primary flags were used to qualify the data for this study:

- (No Code) = Confirmed Identification.
- B = Detected substantially above the level reported in laboratory or field blank.
- R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.
- N = Tentative identification. Consider present. Special methods may be needed to confirm its presence or absence in future sampling events.
- J = Analyte present. Reported value may not be accurate or precise.
- K = Analyte present. Reported value may be biased high. Actual value is expected lower.
- L = Analyte present. Reported value may be biased low. Actual value is expected higher.
- UL = Not detected, quantitation limit is probably higher.
- Q = No analytical result.
- NJ = Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.
- U = The analyte was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.
- R = The data are unusable. Analyte may or may not be present in the sample.
- UJ = The analyte was analyzed for, but not detected. The associated detection limit is an estimate and may be inaccurate or imprecise.
- X = Surrogate recovery outside control limits.
- H = Sample extracted or analyzed outside the method specific holding time

II. VALIDATION REPORT

This report discusses the results of data validation of analytical data provided by Eurofins-Lancaster Laboratories Environmental for samples collected at the Caribbean Airport Facility (CAF) in Carolina, Puerto Rico on November 10 and 11, 2015 reported under SDG numbers: 1608570 and 1608983. Copies of the laboratory results are included in the Appendix A. The methods employed are shown in Table 1. Table 2 summarizes the samples collected, sampling date, and analysis performed.

Table 1. Analytical Methods

ANALYSIS PERFORMED	ANALYTICAL METHOD
AQUEOUS	
TPH- GASOLINE (C6 – C10)	SW846-5030B/SW846-8015B
TPH-DIESEL (C10 – C28)	SW846-3510C/SW846-8015B

Table 2. Samples Analyzed, Sampling Date, and Analysis Performed

SAMPLE NUMBER	SAMPLE DESCRIPTION	SAMPLING DATE	ANALYSIS
8129675	EQUIPMENT BLANK COMPOSITE WATER	11-10-15	TPH-GRO; TPH DRO
8129676	MW11D-W01	11-10-15	TPH-GRO; TPH-DRO
8129677	MW11D-W01MS	11-10-15	TPH-GRO; TPH-DRO
8129678	MW11D-W01MSD	11-10-15	TPH-GRO; TPH DRO
8129679	MW11S-W01	11-10-15	TPH-GRO; TPH-DRO
8129680	MW10S-W01	11-10-15	TPH-GRO; TPH-DRO
8129681	MW10S-W01D	11-10-15	TPH-GRO; TPH DRO
8129682	MW10D-W01	11-10-15	TPH-GRO; TPH-DRO
8129683	MW6D-W01	11-10-15	TPH-GRO; TPH-DRO
8129684	MW6S-W01	11-10-15	TPH-GRO
8129685	TRIP BLANK WATER	10-26-15	TPH-GRO
8129686	FIELD BLANK COMPOSITE WATER	11-10-15	TPH-GRO; TPH-DRO
8129687	MW3D-W01	11-10-15	TPH-GRO; TPH DRO
8129688	MW3S-W01	11-10-15	TPH-GRO; TPH-DRO
8129689	MW9D-W01	11-10-15	TPH-GRO; TPH-DRO
8129690	MW9S-W01	11-10-15	TPH-GRO; TPH DRO
8129691	MW7D-W01	11-10-15	TPH-GRO; TPH-DRO
8129692	MW7S-W01	11-10-15	TPH-GRO; TPH-DRO
8129693	MW7S-W01D	11-10-15	TPH-GRO; TPH DRO
8129694	MW5D-W01	11-10-15	TPH-GRO; TPH DRO
8129695	MW5S-W01	11-10-15	TPH-GRO; TPH-DRO
8132042	EQUIPMENT BLANK COMPOSITE WATER	11-11-15	TPH-GRO; TPH-DRO
8132043	MW4D-W01	11-11-15	TPH-GRO; TPH DRO
8132044	MW4D-W01 MS	11-11-15	TPH-GRO; TPH DRO
8132045	MW4D-W01 MSD	11-11-15	TPH-GRO; TPH DRO

Table 2. Samples Analyzed, Sampling Date, and Analysis Performed

SAMPLE NUMBER	SAMPLE DESCRIPTION	SAMPLING DATE	ANALYSIS
8132046	MW4S-W01	11-11-15	TPH-GRO; TPH DRO
8132047	TRIP BLANK	10-26-15	TPH-GRO
8132048	FIELD BLANK COMPOSITE WATER	11-11-15	TPH-GRO; TPH-DRO
8132049	MW2D-W01	11-11-15	TPH-GRO; TPH-DRO
8132050	MW2S-W01	11-11-15	TPH-GRO; TPH-DRO
8132051	MW1D-W01	11-11-15	TPH-GRO; TPH-DRO
8132052	MW1S-W01	11-11-15	TPH-GRO; TPH-DRO
8132053	MW8D-W01	11-11-15	TPH-GRO; TPH-DRO
8132054	MW8S-W01	11-11-15	TPH-GRO; TPH-DRO

The samples results were evaluated using general guidelines for data validation approved by local (PR Environmental Quality Board (EQB)) and national (Environmental Protection Agency (EPA)). General qualifiers were employed. There are no analytical and quality issues observed in the data package.

Note: Laboratory results are assessed based on accuracy and precision. Accuracy is the difference between experimental value and true value. In environmental samples, true values are not known and thus accuracy is evaluated indirectly. Accuracy evaluation is performed by evaluating surrogate recoveries, analysis of matrix spike/matrix spike duplicates, and laboratory control samples. Accuracy was assessed using laboratory control samples (LCS); matrix spike and matrix spike duplicate recovery results. Precision was assessed by evaluating results of laboratory and field duplicates.

Certification

The samples described in Table 2 were analyzed following standard procedures accepted by regulatory agencies. The quality control requirements met the methods criteria except in the occasions described in this document. The overall quality of the data is acceptable. Some of the results were qualified (J) by the laboratory none of the results were rejected (R). The results are valid and can be used for decision taking purposes.

Rafael Infante
Licensed Chemist
Chemist License 1888

APPENDIX A

Reports of Analysis

Caribbean Airport Facility

eurofins

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Analysis Report

Sample Description: Equipment Blank Composite Water
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129675
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 08:35 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF-E

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	330	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 11:16	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 11:16	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/18/2015 22:50	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Sample Description: MW11D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129676
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 08:54 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA11D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	110	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 09:34	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 09:34	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/18/2015 23:11	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

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Rafael Infante Méndez
LIC. # 1888
QUIMICO LICENCIADO

*=This limit was used in the evaluation of the final result

Sample Description: MW11D-W01MS Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129677
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 08:56 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA11D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	1,200	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	1,200	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 09:59	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 09:59	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/18/2015 23:33	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

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Rafael Infante Méndez
LIC # 1886
QUIMICO LICENCIADO

*=This limit was used in the evaluation of the final result

Sample Description: MW11D-W01MSD Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129678
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 08:58 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA11D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	1,300	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	1,300	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 10:25	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 10:25	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/18/2015 23:54	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

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Rafael Infante Méndez
LIC # 1886
QUIMICO LICENCIADO

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Sample Description: MW11S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129679
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 09:05 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA11S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	610	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 12:32	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 12:32	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/19/2015 03:50	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

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LIC # 1888
QUIMICO LICENCIADO

*=This limit was used in the evaluation of the final result

Sample Description: MW10S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129680
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 09:34 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA10S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	N.D.	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 12:58	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 12:58	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/19/2015 00:16	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

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LIC # 1888
QUIMICO LICENCIADO

*=This limit was used in the evaluation of the final result

Sample Description: MW10S-W01D Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129681
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 09:36 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

C10SD

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	N.D.	31	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 13:23	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 13:23	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/19/2015 00:37	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Sample Description: MW10D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129682
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 09:52 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA10D

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l		ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.		20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l		ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	77	J	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 13:49	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 13:49	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/19/2015 00:59	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

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Rafael Infante Méndez
LIC # 1888
QUÍMICO LICENCIADO

*=This limit was used in the evaluation of the final result

Sample Description: MW6D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129683
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 10:21 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA6D-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	110	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 14:14	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 14:14	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/19/2015 01:21	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 14:40	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 14:40	Marie D Beamenderfer	1

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Analysis Report

Sample Description: Field Blank Composite Water
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129686
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 08:25 by DP
through 11/10/2015 14:44
Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF-F

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	N.D.	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 11:41	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 11:41	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/19/2015 01:42	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

ESTADO LIBRE ASOCIADO DE PUERTO RICO
Rafael Infante Méndez
IC # 1988
QUIMICO LICENCIADO

Sample Description: MW6S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129684
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 10:29 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA6S-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 14:40	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 14:40	Marie D Beamenderfer	1

*=This limit was used in the evaluation of the final result

Sample Description: Trip Blank Water
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129685
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 10/26/2015

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF-T

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15316A20A	11/12/2015 14:17	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	15316A20A	11/12/2015 14:17	Jeremy C Giffin	1

ESTADO LIBRE ASOCIADO DE PUERTO RICO
Rafael Infante Méndez
LIC # 1888
QUÍMICO LICENCIADO

*=This limit was used in the evaluation of the final result

Sample Description: MW3D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129687
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 11:00 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA3D-

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l		ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.		20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l		ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	92	J	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 15:31	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 15:31	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/19/2015 02:03	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Sample Description: MW3S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129688
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 11:06 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA3S-

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l		ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.		20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l		ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	68	J	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 15:56	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 15:56	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/19/2015 02:25	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Sample Description: MW9D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129689
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 14:34 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA9D-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	470	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 16:22	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 16:22	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/19/2015 02:46	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Sample Description: MW9S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129690
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 14:42 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA9S-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	620	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 16:48	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 16:48	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/19/2015 04:12	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

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Analysis Report

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Sample Description: MW7D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129691
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 13:28 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA7D-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	720	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 17:13	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 17:13	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/19/2015 03:29	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

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IQ # 1888
QUIMICO LICENCIADO

Sample Description: MW7S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129692
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 13:33 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
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150 Sector Central
Cardina PR 00979

CA7S-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	190	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 17:39	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 17:39	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153180035A	11/19/2015 03:08	Thomas C Wildermuth	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153180035A	11/16/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Sample Description: MW7S-W01D Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129693
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 13:35 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

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150 Sector Central
Cardina PR 00979

CA7SD

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	160	30	94	1

Target analytes were detected in the method blank associated with the samples as noted on the QC Summary. A reextraction was unable to be performed within hold time.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 18:04	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 18:04	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153210016A	11/18/2015 15:56	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Sample Description: MW5D-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129694
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 14:00 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA5D-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	150	30	95	1

Target analytes were detected in the method blank associated with the samples as noted on the QC Summary. A reextraction was unable to be performed within hold time.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 18:30	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 18:30	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153210016A	11/18/2015 16:18	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW5S-W01 Grab Groundwater
CAF GW Monitoring Well Construction Project (Bimon

LL Sample # WW 8129695
LL Group # 1608570
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/10/2015 14:06 by DP

Submitted: 11/11/2015 09:40
Reported: 11/24/2015 17:55

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CA5S-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	150	30	95	1

Target analytes were detected in the method blank associated with the samples as noted on the QC Summary. A reextraction was unable to be performed within hold time.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317B94A	11/15/2015 18:55	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317B94A	11/15/2015 18:55	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153210016A	11/18/2015 16:40	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Environmental Analysis Request/Chain of Custody

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Acct. # 20530 Group # 1608570 Sample # 8129675-95

Client:	Fernando L. Rodríguez, PE & Associates		
Project Name/#:	CAF GW Monitoring Well Construction Project ~~(Initial Sampling)~~ Bimonthly Sampling	Site ID #:	Caribbean Airport Facilities (L.M.M. Int'l Airport-SJU)
Project Manager:	Fernando L. Rodríguez	P.O. #:	
Sampler:	David Perez	PWSID #:	
Phone #:	787-751-7810	Quote #:	
State where sample(s) were collected:	Puerto Rico		

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Potable Water	Ground	NPDES	Surface	Other: DI Water	Total # of Containers	Analyses Requested: TPH GRO	TPH DRO
Equipment Blank	11-10-15	8:35		✓							✓	5	3	2
MW11D-W01	11-10-15	8:54	✓				✓					5	3	2
MW11D-W01 MS	11-10-15	8:56	✓				✓					5	3	2
MW11D-W01 MSD	11-10-15	8:58	✓				✓					5	3	2
MW11S-W01	11-10-15	9:05	✓				✓					5	3	2

Preservation Codes: H | N/A

For Lab Use Only: SF #: _____ SCR #: _____

Preservation Codes: H = HCl; T = Thiosulfate; N = HNO_3; B = NaOH; S = H_2SO_4; P = H_3PO_4; O = Other

Remarks

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐

(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: hkrodriguez@flraches.com; CC: flrachespr@gmail.com

Phone: 787-751-7810

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐

Type III (Reduced non-CLP) ☐ CT RCP ☐

Type VI (Raw Data Only) ☐ TX TRRP-13 ☐

NYSDEC Category ☐ A or ☐ B

~~EDD Required?~~ Yes ☐ No ☐ If yes, format: _____

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	10/11/15	12:36			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	11-11-15	940

Relinquished by Commercial Carrier:

UPS X FedEx _____ Other _____

Temperature upon receipt 0.7 °C

Environmental Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. # 20530 Group # 1608570 Sample # 8129675-95

Client:	Fernando L. Rodríguez, PE & Associates		
Project Name/#:	CAF GW Monitoring Well Construction Project (Bimonthly Sampling)	Site ID #:	Caribbean Airport Facilities (L.M.M. Int'l Airport-SJU)
Project Manager:	Fernando L. Rodríguez	P.O. #:	
Sampler:	David Pérez	PWSID #:	
Phone #:	787-751-7810	Quote #:	
State where sample(s) were collected:	Puerto Rico		

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Water: Potable	Ground	NPDES	Surface	Other: DI Water	Total # of Containers	Analyses Requested: Preservation Codes: H	N/A	TPH GRO	TPH DRO
MW10S-W01	11-10-15	9:34	✓					✓				5	H	N/A	3	2
MW10S-W01D	11-10-15	9:36	✓					✓				5	H	N/A	3	2
MW10D-W01	11-10-15	9:52	✓					✓				5	H	N/A	3	2
MW6D-W01	11-10-15	10:21	✓					✓				5	H	N/A	3	2
MW6S-W01	11-10-15	10:29	✓					✓				5	H	N/A	3	2
Trip Blank	10-26-15										✓	2	H	N/A		

For Lab Use Only

SF #: _____

SCR #: _____

Preservation Codes: H = HCl; T = Thiosulfate; N = HNO_3; B = NaOH; S = H_2SO_4; P = H_3PO_4; O = Other

Remarks

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐

(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: hkrodriguez@firaches.com; CC: firachespr@gmail.com

Phone: 787-751-7810

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐

Type III (Reduced non-CLP) ☐ CT RCP ☐

Type VI (Raw Data Only) ☐ TX TRRP-13 ☐

NYSDEC Category ☐ A or ☐ B

EDD Required? Yes ☐ No ☐ If yes, format: _____

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	10/29/15	12:46			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	11.11.15	940

Relinquished by Commercial Carrier:

UPS X FedEx _____ Other _____

Temperature upon receipt 2-7 °C

Environmental Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. # 20530 Group # 1608570 Sample # 8129675-95

Client:	Fernando L. Rodríguez, PE & Associates		
Project Name/#:	CAF GW Monitoring Well Construction Project (Bimonthly Sampling)	Site ID #:	Caribbean Airport Facilities (L.M.M. Int'l Airport-SJU)
Project Manager:	Fernando L. Rodríguez	P.O. #:	
Sampler:	David Perez	PWSID #:	
Phone #:	787-751-7810	Quote #:	
State where sample(s) were collected:	Puerto Rico		

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Potable Water	Ground	NPDES	Surface	Other: DI water	Total # of Containers	Analyses Requested: TPH GRO	TPH DRO
Field Blank	11-10-15	8:25 1444		✓							✓	5	3	2
MW3D-W01	11-10-15	11:00	✓				✓					5	3	2
MW35-W01	11-10-15	11:06	✓				✓					5	3	2
MW9D-W01	11-10-15	1434	✓				✓					5	3	2
MW95-W01	11-10-15	1442	✓				✓					5	3	2

Preservation Codes: H | N | A

For Lab Use Only: SF #: _____ SCR #: _____

Preservation Codes: H = HCl; T = Thiosulfate; N = HNO_3; B = NaOH; S = H_2SO_4; P = H_3PO_4; O = Other

Remarks

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐

(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: hkrodriguez@flraches.com; CC: flrachespr@gmail.com

Phone: 787-751-7810

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐

Type III (Reduced non-CLP) ☐ CT RCP ☐

Type VI (Raw Data Only) ☐ TX TRRP-13 ☐

NYSDEC Category ☐ A or ☐ B

EDD Required? Yes ☐ No ☐ If yes, format: _____

Relinquished by:	Date	Time	Received by:	Date	Time
	10 Nov 15	15:48			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	11-11-15	940

Relinquished by Commercial Carrier:

UPS X FedEx _____ Other _____

Temperature upon receipt 2.9 °C

Environmental Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. # 20530 Group # 1608570 Sample # 8129675-95

Client:	Fernando L. Rodríguez, PE & Associates		
Project Name/#:	CAF GW Monitoring Well Construction Project (Bimonthly Sampling)	Site ID #:	Caribbean Airport Facilities (L.M.M. Int'l Airport-SJU)
Project Manager:	Fernando L. Rodríguez	P.O. #:	
Sampler:	David Perez	PWSID #:	
Phone #:	787-751-7810	Quote #:	

State where sample(s) were collected: Puerto Rico

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Potable Water	Ground	NPDES	Surface	Other:	Total # of Containers	Analyses Requested: TPH GRO (Preservation Code: H)	Analyses Requested: TPH DRO (Preservation Code: N/a)
MW7D-W01	11-10-15	1328	✓				✓					5	3	2
MW7S-W01	11-10-15	1333	✓				✓					5	3	2
MW7S-W01D	11-10-15	1335	✓				✓					5	3	2
MW5D-W01	11-10-15	1400	✓				✓					5	3	2
MW5S-W01	11-10-15	1406	✓				✓					5	3	2

For Lab Use Only

SF #: _____

SCR #: _____

Preservation Codes: H = HCl; T = Thiosulfate; N = HNO_3; B = NaOH; S = H_2SO_4; P = H_3PO_4; O = Other

Remarks

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐

(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: hkrodriguez@flraches.com; CC: flrachespr@gmail.com

Phone: 787-751-7810

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐

Type III (Reduced non-CLP) ☐ CT RCP ☐

Type VI (Raw Data Only) ☐ TX TRRP-13 ☐

NYSDEC Category ☐ A or ☐ B

EDD Required? Yes ☐ No ☐ If yes, format: _____

	Relinquished by:	Date	Time	Received by:	Date	Time
1	[signature]	10/Nov/15	15:39			
2						
3						
4						
5						
6				[signature]	11.11.15	940

Relinquished by Commercial Carrier:

UPS X FedEx _____ Other _____

Temperature upon receipt 1.2 °C

Sample Description: Equipment Blank Grab Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8132042
LL Group # 1608983
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/11/2015 07:15 by DP

Submitted: 11/12/2015 09:50
Reported: 11/24/2015 17:59

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAFEB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	120	31	95	1

Target analytes were detected in the method blank associated with the samples as noted on the QC Summary. A reextraction was unable to be performed within hold time.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317C20A	11/16/2015 18:52	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317C20A	11/16/2015 18:52	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153210016A	11/18/2015 17:01	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Sample Description: MW4D-W01 Grab Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8132043
LL Group # 1608983
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/11/2015 07:24 by DP

Submitted: 11/12/2015 09:50
Reported: 11/24/2015 17:59

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF4D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		**ug/l**	**ug/l**	**ug/l**	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		**ug/l**	**ug/l**	**ug/l**	
08269	TPH-DRO water C10-C28	n.a.	84 J	30	95	1

Target analytes were detected in the method blank associated with the samples as noted on the QC Summary. A reextraction was unable to be performed within hold time.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317C20A	11/16/2015 17:16	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317C20A	11/16/2015 17:16	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	2	153210016A	11/18/2015 17:23	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

COLEGIO DE QUIMICOS DE PUERTO RICO
Rafael Infante Méndez
IC # 1388
QUIMICO LICENCIADO

*=This limit was used in the evaluation of the final result

Sample Description: MW4D-W01 MS Grab Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8132044
LL Group # 1608983
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/11/2015 07:26 by DP

Submitted: 11/12/2015 09:50
Reported: 11/24/2015 17:59

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF4D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		**ug/l**	**ug/l**	**ug/l**	
01635	TPH-GRO water C6-C10	n.a.	1,300	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		**ug/l**	**ug/l**	**ug/l**	
08269	TPH-DRO water C10-C28	n.a.	1,300	30	94	1

Target analytes were detected in the method blank associated with the samples as noted on the QC Summary. A reextraction was unable to be performed within hold time.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317C20A	11/16/2015 17:43	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317C20A	11/16/2015 17:43	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153210016A	11/18/2015 17:45	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Sample Description: MW4D-W01 MSD Grab Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8132045
LL Group # 1608983
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/11/2015 07:28 by DP

Submitted: 11/12/2015 09:50
Reported: 11/24/2015 17:59

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF4D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		**ug/l**	**ug/l**	**ug/l**	
01635	TPH-GRO water C6-C10	n.a.	1,300	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		**ug/l**	**ug/l**	**ug/l**	
08269	TPH-DRO water C10-C28	n.a.	1,000	30	95	1

Target analytes were detected in the method blank associated with the samples as noted on the QC Summary. A reextraction was unable to be performed within hold time.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317C20A	11/16/2015 18:07	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317C20A	11/16/2015 18:07	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153210016A	11/18/2015 18:07	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Sample Description: MW4S-W01 Grab Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8132046
LL Group # 1608983
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/11/2015 07:34 by DP

Submitted: 11/12/2015 09:50
Reported: 11/24/2015 17:59

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF4S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	100	250	5
	Reporting limits were raised due to sample foaming.					
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	3,500	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317C20A	11/17/2015 00:00	Marie D Beamenderfer	5
01146	GC VOA Water Prep	SW-846 5030B	1	15317C20A	11/17/2015 00:00	Marie D Beamenderfer	5
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153210016A	11/18/2015 22:28	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Sample Description: Trip Blank Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8132047
LL Group # 1608983
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 10/26/2015

Submitted: 11/12/2015 09:50
Reported: 11/24/2015 17:59

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAFTB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317C20A	11/16/2015 22:53	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317C20A	11/16/2015 22:53	Marie D Beamenderfer	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: Field Blank Grab Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8132048
LL Group # 1608983
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/11/2015 07:08 by DP
through 11/11/2015 09:50
Submitted: 11/12/2015 09:50
Reported: 11/24/2015 17:59

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAFFB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	N.D.	30	95	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317C20A	11/16/2015 19:14	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317C20A	11/16/2015 19:14	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153210016A	11/18/2015 19:55	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Sample Description: MW2D-W01 Grab Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8132049
LL Group # 1608983
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/11/2015 08:14 by DP

Submitted: 11/12/2015 09:50
Reported: 11/24/2015 17:59

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF2D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		**ug/l**	**ug/l**	**ug/l**	
01635	TPH-GRO water C6-C10	n.a.	N.D.	100	250	5
	Reporting limits were raised due to sample foaming.					
GC Petroleum Hydrocarbons	**SW-846 8015B**		**ug/l**	**ug/l**	**ug/l**	
08269	TPH-DRO water C10-C28	n.a.	92 J	30	95	1
	Target analytes were detected in the method blank associated with the samples as noted on the QC Summary. A reextraction was unable to be performed within hold time.					

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317C20A	11/17/2015 00:22	Marie D Beamenderfer	5
01146	GC VOA Water Prep	SW-846 5030B	1	15317C20A	11/17/2015 00:22	Marie D Beamenderfer	5
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153210016A	11/18/2015 20:17	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Sample Description: MW2S-W01 Grab Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8132050
LL Group # 1608983
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/11/2015 08:23 by DP

Submitted: 11/12/2015 09:50
Reported: 11/24/2015 17:59

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF2S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	100	250	5
	Reporting limits were raised due to sample foaming.					
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	630	30	94	1

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317C20A	11/17/2015 00:44	Marie D Beamenderfer	5
01146	GC VOA Water Prep	SW-846 5030B	1	15317C20A	11/17/2015 00:44	Marie D Beamenderfer	5
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153210016A	11/18/2015 22:06	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Sample Description: MW1D-W01 Grab Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8132051
LL Group # 1608983
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/11/2015 08:55 by DP

Submitted: 11/12/2015 09:50
Reported: 11/24/2015 17:59

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF1D

CAT No.	Analysis Name	CAS Number	Result		Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l		ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	47	J	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l		ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	67	J	30	94	1

Target analytes were detected in the method blank associated with the samples as noted on the QC Summary. A reextraction was unable to be performed within hold time.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317C20A	11/16/2015 23:15	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317C20A	11/16/2015 23:15	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153210016A	11/18/2015 20:39	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW1S-W01 Grab Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8132052
LL Group # 1608983
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/11/2015 09:04 by DP

Submitted: 11/12/2015 09:50
Reported: 11/24/2015 17:59

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF1S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	100	250	5
	Reporting limits were raised due to sample foaming.					
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	160	30	95	1
	Target analytes were detected in the method blank associated with the samples as noted on the QC Summary. A reextraction was unable to be performed within hold time.					

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317C20A	11/17/2015 01:07	Marie D Beamenderfer	5
01146	GC VOA Water Prep	SW-846 5030B	1	15317C20A	11/17/2015 01:07	Marie D Beamenderfer	5
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153210016A	11/18/2015 21:44	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW8D-W01 Grab Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8132053
LL Group # 1608983
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/11/2015 09:42 by DP

Submitted: 11/12/2015 09:50
Reported: 11/24/2015 17:59

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF8D

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		ug/l	ug/l	ug/l	
01635	TPH-GRO water C6-C10	n.a.	N.D.	100	250	5
	Reporting limits were raised due to sample foaming.					
GC Petroleum Hydrocarbons	**SW-846 8015B**		ug/l	ug/l	ug/l	
08269	TPH-DRO water C10-C28	n.a.	240	30	95	1
	Target analytes were detected in the method blank associated with the samples as noted on the QC Summary. A reextraction was unable to be performed within hold time.					

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317C20A	11/17/2015 01:29	Marie D Beamenderfer	5
01146	GC VOA Water Prep	SW-846 5030B	1	15317C20A	11/17/2015 01:29	Marie D Beamenderfer	5
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153210016A	11/18/2015 21:01	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

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Analysis Report

Sample Description: MW8S-W01 Grab Water
CAF GW Monitoring Well Construction Project

LL Sample # WW 8132054
LL Group # 1608983
Account # 20530

Project Name: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)

Collected: 11/11/2015 09:49 by DP

Submitted: 11/12/2015 09:50
Reported: 11/24/2015 17:59

Caribbean Airport Facilities
Suite 3
150 Sector Central
Cardina PR 00979

CAF8S

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
GC Volatiles	**SW-846 8015B**		**ug/l**	**ug/l**	**ug/l**	
01635	TPH-GRO water C6-C10	n.a.	N.D.	20	50	1
GC Petroleum Hydrocarbons	**SW-846 8015B**		**ug/l**	**ug/l**	**ug/l**	
08269	TPH-DRO water C10-C28	n.a.	57 J	30	95	1

Target analytes were detected in the method blank associated with the samples as noted on the QC Summary. A reextraction was unable to be performed within hold time.

General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
01635	TPH-GRO water C6-C10	SW-846 8015B	1	15317C20A	11/16/2015 23:38	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	15317C20A	11/16/2015 23:38	Marie D Beamenderfer	1
08269	TPH-DRO water C10-C28	SW-846 8015B	1	153210016A	11/18/2015 21:22	Christine E Dolman	1
07003	Extraction - DRO (Waters)	SW-846 3510C	1	153210016A	11/17/2015 19:00	Samantha L Bronder	1

*=This limit was used in the evaluation of the final result

Environmental Analysis Request/Chain of Custody

Lancaster Laboratories Environmental

Acct. # 20530 Group # 1608983 Sample # 8132042-54

Client:	Fernando L. Rodríguez, PE & Associates		
Project Name/#:	CAF GW Monitoring Well Construction Project (Bimonthly Sampling)	Site ID #:	Caribbean Airport Facilities (L.M.M. Int'l Airport-SJU)
Project Manager:	Fernando L. Rodríguez	P.O. #:	
Sampler:	David Perez	PWSID #:	
Phone #:	787-751-7810	Quote #:	
State where sample(s) were collected:	Puerto Rico		

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Water: Potable	Ground	NPDES	Surface	Other: DI Water	Total # of Containers	Analyses Requested: TPH GRO	TPH DRO	Preservation Codes: H	M/A	Remarks
Equipment Blank	11-11-15	7:15		✓							✓	5	3	2			
MW4D-W01	11-11-15	7:24	✓					✓				5	3	2			
MW4D-W01 MS	11-11-15	7:26	✓					✓				5	3	2			
MW4D-W01 MSD	11-11-15	7:28	✓					✓				5	3	2			
MW4S-W01	11-11-15	7:34	✓					✓				5	3	2			
Trip Blank	10-26-15																

For Lab Use Only

SF #: _____

SCR #: _____

Preservation Codes: H = HCl; T = Thiosulfate; N = HNO_3; B = NaOH; S = H_2SO_4; P = H_3PO_4; O = Other

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐

(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: hkrodriguez@flraches.com; CC: flrachespr@gmail.com

Phone: 787-751-7810

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐

Type III (Reduced non-CLP) ☐ CT RCP ☐

Type VI (Raw Data Only) ☐ TX TRRP-13 ☐

NYSDEC Category ☐ A or ☐ B

EDD Required? Yes ☐ No ☐ If yes, format: _____

	Relinquished by:	Date	Time	Received by:	Date	Time
1	[signature]	11/11/15	9:58			
2						
3						
4						
5				[signature]	11-12-15	0815

Relinquished by Commercial Carrier: UPS X FedEx _____ Other _____

Temperature upon receipt 5.0 °C

Environmental Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. # 20530 Group # 1608983 Sample # 8132042-54

Client: Fernando L. Rodriguez, PE & Associates			
Project Name/#: CAF GW Monitoring Well Construction Project (Bimonthly Sampling)	Site ID #: Caribbean Airport Facilities (L.M.M. Int'l Airport-SJU)		
Project Manager: Fernando L. Rodríguez	P.O. #:		
Sampler: David Perez	PWSID #:		
Phone #: 787-751-7810	Quote #:		
State where sample(s) were collected: Puerto Rico			

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Sediment	Potable Water	Ground	NPDES	Surface	Other: DI Water	Total # of Containers	Analyses Requested: TPH GRO (H)	TPH DRO (N/A)
Field Blank	11-11-15	7:08 9:50		✓							✓	5	3	2
MW2D-W01	11-11-15	8:14	✓				✓					5	3	2
MW2S-W01	11-11-15	8:23	✓				✓					5	3	2
MW1D-W01	11-11-15	8:55	✓				✓					5	3	2
MW1S-W01	11-11-15	9:04	✓				✓					5	3	2

Preservation Codes: H = HCl; N = HNO_3; S = H_2SO_4; O = Other; T = Thiosulfate; B = NaOH; P = H_3PO_4

For Lab Use Only: SF #: _____ SCR #: _____

Remarks

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐

(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: hkrodriguez@flraches.com; CC: flrachespr@gmail.com

Phone: 787-751-7810

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐

Type III (Reduced non-CLP) ☐ CT RCP ☐

Type VI (Raw Data Only) ☐ TX TRRP-13 ☐

NYSDEC Category ☐ A or ☐ B

EDD Required? Yes ☐ No ☐ If yes, format: _____

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	11/11/15	10:18			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	Date 11-12-15	Time 950

Relinquished by Commercial Carrier: UPS X FedEx _____ Other _____

Temperature upon receipt 2.1 °C

7045 0614

Environmental Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. # 20530 Group # 1608983 Sample # 8132042-54

Client:	Fernando L. Rodríguez, PE & Associates		
Project Name/#:	CAF GW Monitoring Well Construction Project (Bimonthly Sampling)	Site ID #:	Caribbean Airport Facilities (L.M.M. Int'l Airport-SJU)
Project Manager:	Fernando L. Rodríguez	P.O. #:	
Sampler:	David Perez	PWSID #:	
Phone #:	787-751-7810	Quote #:	
State where sample(s) were collected:	Puerto Rico		

Sample Identification	Collection Date	Collection Time	Grab	Composite	Matrix: Soil	Matrix: Sediment	Matrix: Water (Potable / Ground / NPDES / Surface)	Matrix: Other:	Total # of Containers	Analyses Requested: TPH GRO	Analyses Requested: TPH DRO
							Preservation Codes: H			H	N/A
MW8D-W01	11-11-15	9:42	✓				✓		5	3	2
MW8S-W01	11-11-15	9:49	✓				✓		5	3	2

For Lab Use Only

SF #: _____

SCR #: _____

Preservation Codes

H = HCl T = Thiosulfate

N = HNO_3 B = NaOH

S = H_2SO_4 P = H_3PO_4

O = Other

Remarks

Turnaround Time Requested (TAT) (please check): Standard ☑ Rush ☐

(Rush TAT is subject to laboratory approval and surcharges.)

Date results are needed:

Rush results requested by (please check): E-Mail ☑ Phone ☐

E-mail Address: hkrodriguez@flraches.com; CC: flrachespr@gmail.com

Phone: 787-751-7810

Data Package Options (please check if required)

Type I (Validation/non-CLP) ☐ MA MCP ☐

Type III (Reduced non-CLP) ☐ CT RCP ☐

Type VI (Raw Data Only) ☐ TX TRRP-13 ☐

NYSDEC Category ☐ A or ☐ B

EDD Required? Yes ☐ No ☐ If yes, format: _____

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	11/11/15	10:36			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by: [signature]	11-12-15	950

Relinquished by Commercial Carrier:

UPS X FedEx _____ Other _____

Temperature upon receipt 4.4 °C

APPENDIX B

Data Review Worksheets

Caribbean Airport Facility

Type of validation Full:_____
Project Number: _____ Date:_____

REVIEW OF SEMIVOLATILE ORGANIC (SVOCs) PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence *Data Validation Standard Operating Procedure for Organic Analysis of Low/Medium Concentration Semivolatile Acquired using SW-846 Method 8270C* (SOW SOM01.2- SOP HW-35, August 2009 – Revision 1); Validation Semivolatile Organic Compounds by SW846 8270 (SOP HW-22, August, 2009 – Revision 4) (noted herein as the "primary guidance document"), Also, QC criteria from *"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996),"* specifically for *Methods 8000/8270C* are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.
The hardcopied (laboratory name) _____ data package received has been reviewed and the quality control and performance data summarized. The data review for SVOCs included:

Lab. Project/SDG No.: _____
Sample matrix: _____ No. of Samples: _____
Field blank No.:_____
Trip blank No.:_____
Equipment blank No.: _____
Field duplicate No.:_____

_____ Data Completeness
_____ Holding Times
_____ GC/MS Tuning
_____ Internal Standard Performance
_____ Blanks
_____ Surrogate Recoveries
_____ Matrix Spike/Matrix Spike Duplicate
_____ Laboratory Control Spikes
_____ Field Duplicates
_____ Calibrations
_____ Compound Identifications
_____ Compound Quantitation
_____ Quantitation Limits

Overall Comments: _____
_____

Definition of Qualifiers:

J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated nondetect

Reviewer:_____
Date:_____

All criteria were met ____
Criteria were not met and/or see below _____

I. DATA COMPLETNESS
A. Data Package:

MISSING INFORMATION DATE LAB. CONTACTED DATE RECEIVED

B. Other Discrepancies:

All criteria were met _____
Criteria were not met and/or see below _____

HOLDING TIMES
The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of extraction, and subsequently from the time of extraction to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE EXTRACTED	DATE ANALYZED	ACTION

Criteria

Extraction HT: Aqueous extract within 7 days from sample collection, Soil: extract within 14 days.
Analysis HT: Aqueous and soil samples: analysis within 40 days from date of sample extraction.
Cooler temperature (Criteria: 4 $\pm$ 2 ^{o}C):_____

Actions: Qualify positive results/nondetects as follows:

If holding times are exceeded, estimate positive results (J) and nondetects (UJ).
If holding times are grossly exceeded, use professional judgment to qualify data. The data reviewer may choose to estimate positive results (J) and rejects nondetects (R).
If samples were not at the proper temperature (> 10^{o}C), use professional judgment to qualify the results.

All criteria were met _____
Criteria were not met and/or see below _____

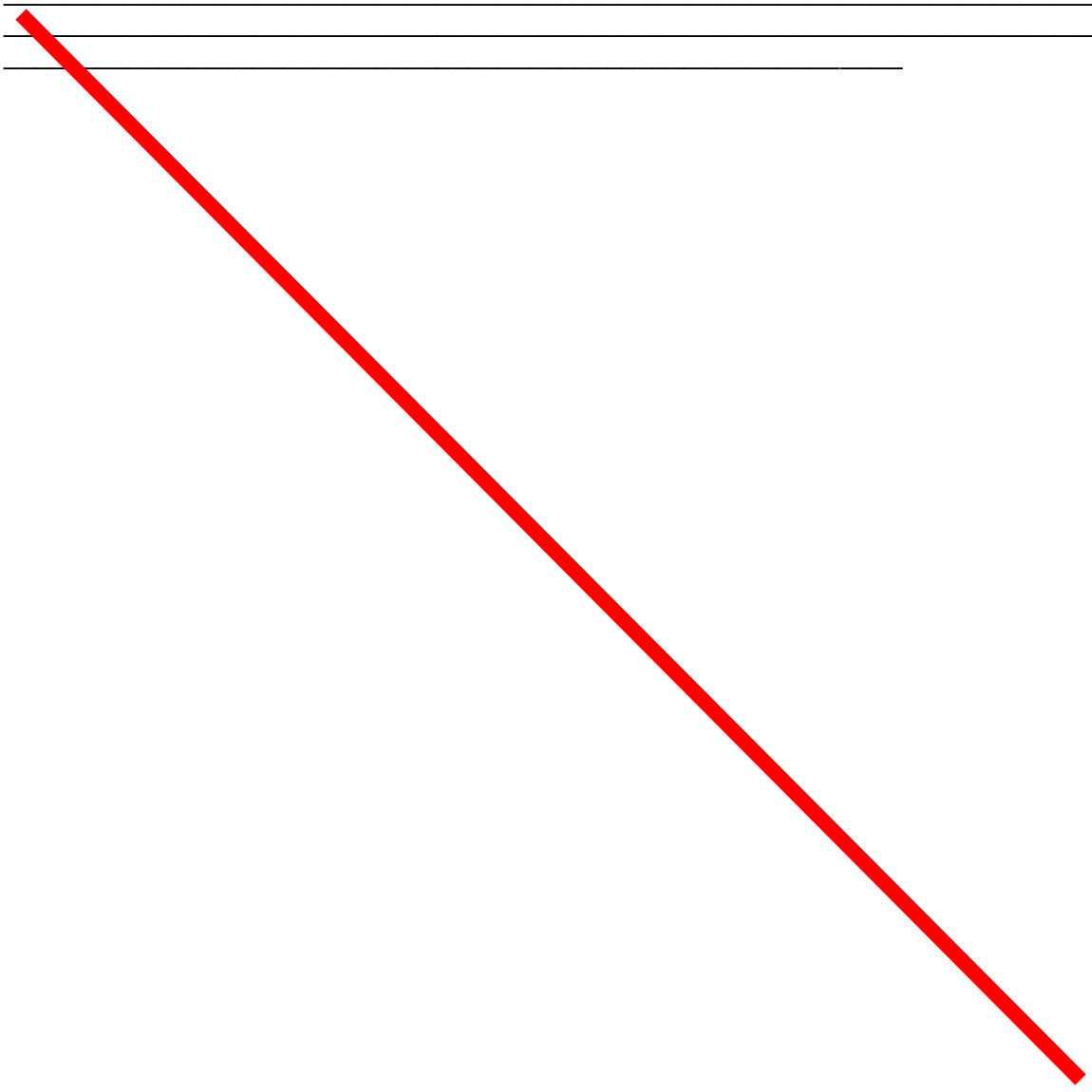
GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

____ The DFTPP performance results were reviewed and found to be within the specified criteria. If ion abundance criteria were not met, use professional judgment to qualify results. If mass assignment is in error (e.g., m/z 199 as base peak instead of m/z 198), all associated data are rejected (R).

____ All samples were analyzed within 12 hours of the DFTPP tuning. If no, use professional judgment to determine if qualification is appropriate.

List the samples affected: _____
_____
_____
_____



All criteria were met ___X___
Criteria were not met and/or see below _____

CALIBRATIONS VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:_____
Dates of continuing calibration:_____
Instrument ID numbers:_____
Matrix/Level:_____

DATE	LAB FILE ID#	ANALYTE	CRITERIA OUT RFs, %RSD, %D, r	SAMPLES AFFECTED

Criteria- ICAL
All RFs must be > 0.05 for all analytes.
All %RSD must be $\leq$ 15 or correlation coefficients (r) > 0.99 for all except: %RPDs $\leq$ 30% for CCCs:

Base Neutral:	1,4-Dichlorobenzene	Fluoranthene	Acid:	Phenol
	Hexachlorobutadiene	Di-n-octyl-phthalate		2-Nitrophenol
	Acenaphthene	Benzo(a)pyrene		2,4-Dichlorophenol
	Diphenylamine[1]			4-Chloro-3-methylphenol

Criteria- CCAL

RFs $\geq$ for SPCCs (N-nitroso-di-n-propylamine, hexachlorocyclopentadiene, 2,4-nitrophenol, and 4-nitrophenol)
All percent differences (%Ds) must be $\leq$ 20%.

Actions:

If RF < 0.05, estimate positive results (J) and reject nondetects (R).
If %RSD > 35% for target compounds (> 30 for CCCs) or a correlation coefficient < 0.99, estimate positive results (J) and use professional judgment to qualify nondetects.
If % D > 20%, estimate positive results (J) and nondetects (UJ).

A separate worksheet should be filled for each initial curve

[1] Cannot be separated from N-Nitrosodiphenylamine

All criteria were met ___
Criteria were not met and/or see below _____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS

Field/Trip/Equipment

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS

All criteria were met ____
Criteria were not met and/or see below _____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs of 10x the amount in the blank for the common contaminants (phthalates), or 5x the amount of any other compound. Specific actions area as follows:

If the concentration is < sample quantitation limit (SQL) and < AL, report the compound as not detected (U) at the SQL.
If the concentration is $\geq$ SQL but < AL, report the compound as not detected (U) at the reported concentration.
If the concentration is > AL, report the concentration unqualified.

All criteria were met _____
Criteria were not met and/or see below ____

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.
List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.
Matrix: solid/aqueous

SAMPLE ID	BASE/NEUTRAL SURROGATE COMPOUND			ACTION
	NBZ	FBP	TPH	

QC Limits* (Aqueous)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____
QC Limits* (Solid)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____

SAMPLE ID	ACID SURROGATE COMPOUND			ACTION
	PHL	2FP	TBP	

QC Limits* (Aqueous)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____
QC Limits* (Solid)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____

NBZ = Nitrobenzene-d5 PHL = Phenol-d5
FBP = 2-Fluorobiphenyl 2FP = 2-Fluorophenol
TPH = Terphenyl-d14 TBP = 2,4,6-Tribromophenol

* Surrogate recoveries must fall between laboratory QC limits. If any surrogate is out of QC limits, there should be reanalysis to confirm that the noncompliance is due to sample matrix effects rather than laboratory deficiencies.

Actions:

Data are not qualified unless two or more surrogate %Rs within the same fraction (base/neutral or acid) are out of specification but > 10% or one surrogate %R within the same fraction < 10%. If surrogate %Rs are outside QC limit due to dilution, use professional judgment to qualify sample data. Surrogate action should be applied as follow:

QUALIFY RESULTS WITHIN THE SAME FRACTION (BASE/NEUTRAL OR ACID)	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

All criteria were met _____
Criteria were not met and/or see below _____

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples.

MS/MSD Recoveries and Precision Criteria

Sample ID:_____ Matrix/Level:_____

List the %Rs, RPD of the compounds which do not meet the QC criteria.

MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION

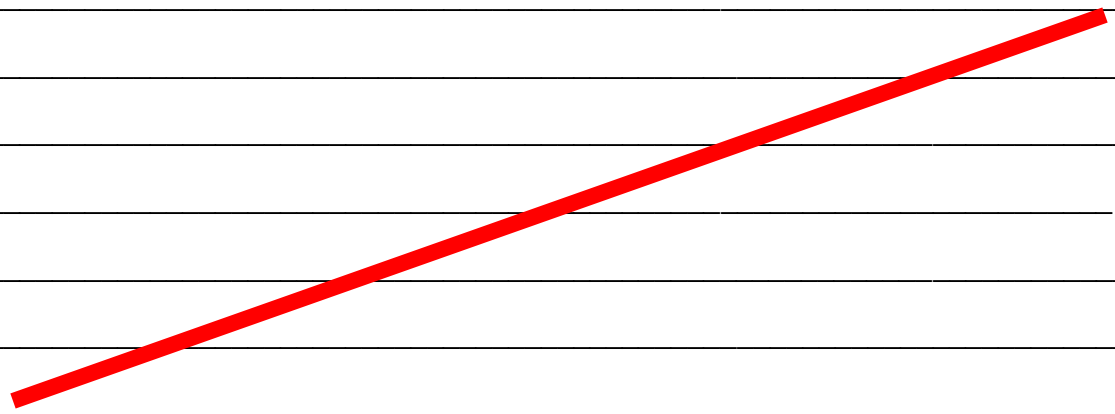
No action is taken on MS/MSD results alone to qualify the entire case. However, used informed professional judgment, the data reviewer may use the MS/MSD results in conjunction with other QC criteria and determine the need for some qualification of the data. In those instances where it can be determined that the results of the MS/MSD affect only the sample spiked, the qualification should be limited to this sample alone. However, it may be determined through the MS/MSD results that the laboratory is having a systematic problem in the analysis of one or more analytes, which affects the associated samples.

All criteria were met ____
Criteria were not met and/or see below _____

2. MS/MSD – Unspiked Compounds

List the concentrations of the unspiked compounds and determine the % RSDs of these compounds in the unspiked sample, matrix spike, and matrix spike duplicate.

COMPOUND	CONCENTRATION SAMPLE	MS	MSD	%RPD	ACTION



Criteria: None specified, use %RSD $\leq$ 50 as professional judgment.

Actions:

If the % RSD > 50, qualify the results in the spiked sample as estimate (J).
If the % RSD is not calculable (NC) due to nondetect value in the sample, MS, and/or MSD, use professional judgment to qualify sample data.

A separate worksheet should be used for each MS/MSD pair.

All criteria were met ____
Criteria were not met and/or see below _____

VIII. LABORATORY CONTROL SAMPLE (LCS/LCSD) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT	ACTION

Criteria:
* Use laboratory QC limits (LL = lower limit, UL = upper limit).
* Refer to QAPP for specific criteria.

Actions:
Actions on LCS recovery should be based on both the number of compounds that are outside the %R criteria and the magnitude of the exceedance of the criteria.

If the %R of the analyte is > UL, qualify all positive results (J) for the affected analyte in the associated samples and accept nondetects.
If the %R of the analyte is < LL, qualify all positive results (J) and reject (R) nondetects for the affected analyte in the associated samples.
If more than half the compounds in the LCS are not within the required recovery criteria, qualify all positive results as (J) and reject nondetects (R) for all target analyte(s) in the associated samples.

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix (1 per 20 samples per matrix)? **Yes** or No.
If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected. Discuss the actions below:

All criteria were met ____
Criteria were not met and/or see below _____

IX. FIELD DUPLICATE PRECISION

Sample IDs: _____ Matrix:_____

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which measures only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION

Criteria:

The project QAPP should be reviewed for project-specific information.
RPD $\pm$ 30% for aqueous samples, RPD $\pm$ 50 % for solid samples if results are $\geq$ SQL.
If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

SQL = soil quantitation limit

Actions:

If both the sample and the duplicate results are nondetects (ND), the RPD is not calculable (NC). No action is needed.

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria.

If one sample result is not detected and the other is $\geq$ 5x the SQL qualify (J/UJ).

Note: If SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is < 5x the SQL, use professional judgment to determine if qualification is appropriate.

All criteria were met ____
Criteria were not met and/or see below _____

IX. LABORATORY DUPLICATE PRECISION

Sample IDs: _____ Matrix:_____

Laboratory duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which measures only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION

Criteria:

The project QAPP should be reviewed for project-specific information.
RPD $\pm$ 30% for aqueous samples, RPD $\pm$ 50 % for solid samples if results are $\geq$ SQL.
If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

SQL = soil quantitation limit

Actions:

If both the sample and the duplicate results are nondetects (ND), the RPD is not calculable (NC). No action is needed.

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria.

If one sample result is not detected and the other is $\geq$ 5x the SQL qualify (J/UJ).

Note: If SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is < 5x the SQL, use professional judgment to determine if qualification is appropriate.

All criteria were met _____
Criteria were not met and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area and/or retention times (RT) which do not meet the criteria for IS performance.

DATE	SAMPLE ID	IS OUT	IS AREA/RT	ACCEPTABLE RANGE	ACTION

Criteria:
* IS area of +100% or -50% of the IS area in the associated calibration standard (CCAL).
* Retention time (RT) within 30 seconds of the IS area in the associated calibration standard (CCAL).

Actions:
If an IS is outside the QC limit, it is recommended reanalysis to confirm that the noncompliance is due to sample matrix effects rather than laboratory differences.

Validation actions should be applied to compounds quantitated with the out of control IS as follows:

QUALITY	IS AREA < -10%	IS AREA = -10 % TO – 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction. Discuss actions below:

All criteria were met ____
Criteria were not met and/or see below _____

XI. COMPOUND IDENTIFICATION

The compound identification evaluation is to verify that the laboratory correctly identified target analytes as well as tentatively identified compounds (TICs).

1. Verify that the target analytes were within the retention time windows.

Verify that the quantitation of the target analytes and/or TICs using the correct internal standards.

If target analytes and/or TICs were not correctly identified, request that the laboratory resubmit the corrected data.

All criteria were met ____
Criteria were not met and/or see below _____

XII. QUANTITATION LIMITS AND SAMPLE RESULTS

The sample quantitation evaluation is to verify laboratory quantitation results.

1. In the space below, please show a minimum of one sample calculation:

2. If requested, verify that the results were above the laboratory method detection limit (MDLs).

3. If dilutions performed, were the SQLs elevated accordingly by the laboratory? List the affected samples and dilution factor in the table below.

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION
BEL-1305093	100 X	Matrix interference

If dilution was not performed, estimate results (J) for the affected compounds. List the affected samples/compounds:

_____
_____

Project Number:_____ Date:_____

REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: USEPA Region 2, SOP HW-24, Standard Operating Procedure for the Validation of Organic Data Acquired using SW-846 Method 8260B (August, 2009-Revision 2), the USEPA National Functional Guidelines for Low/Medium Concentration Organic Data Review (SOW SOM01.2 SOP HW-33, August 2009 – Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August, 2009-Revision 3). Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8260B are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) _____ data package received has been reviewed and the quality control and performance data summarized. The data review for VOCs included:

Lab. Project/SDG No.: _____ Sample matrix: _____
No. of Samples: _____
Trip blank No.: _____
Field blank No.: _____
Equipment blank No.:_____
Field duplicate No.:_____

_____ Data Completeness
_____ Holding Times
_____ GC/MS Tuning
_____ Internal Standard Performance
_____ Blanks
_____ Surrogate Recoveries
_____ Matrix Spike/Matrix Spike Duplicate
_____ Laboratory Control Spikes
_____ Field Duplicates
_____ Calibrations
_____ Compound Identifications
_____ Compound Quantitation
_____ Quantitation Limits

Overall Comments:_____
_____

Definition of Qualifiers:

J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated nondetect

Reviewer:_____ Date:_____

DATA COMPLETENESS

MISSING INFORMATION DATE LAB. CONTACTED DATE RECEIVED

All criteria were met _____
Criteria were not met
and/or see below _____

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH $\leq$ 2, 4^{o}C), no air bubbles.
Aqueous samples – 7 days from sample collection for unpreserved samples, 4^{o}C, no air bubbles.
Soil samples- 14 days from sample collection.
Cooler temperature (Criteria: 4 $\pm$ 2 ^{o}C):

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).
If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ)
If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).
If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).
If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).
If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).
If samples were not iced or if the ice were melted (> 10^{o}C), estimate positive results (J) and nondetects (UJ).

All criteria were met _____
Criteria were not met see below _____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

___ The BFB performance results were reviewed and found to be within the specified criteria.

___ BFB tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List the samples affected: _____

If mass calibration is in error, all associated data are rejected.

All criteria were met _____
Criteria were not met
and/or see below _____

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:_____
Dates of continuing calibration:_____
Instrument ID numbers:_____
Matrix/Level:_____

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.
All %RSD must be $\leq$ 15 % regardless of method requirements for CCC.
All %Ds must be $\leq$ 20% regardless of method requirements for CCC.
It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of $\geq$ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.
If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.
If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).
If any compound has a % D > 20%, estimate positive results (J) and reject nondetects (R).
If any compound has a % D > 20%, estimate positive results (J) and nondetects (UJ).
If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).
If any compound has r > 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were met _____
Criteria were not met
and/or see below _____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS

All criteria were met _____
Criteria were not met
and/or see below _____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)
ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and ≤ AL, report the compound as not detected (U) at the SQL.
If the concentration is ≥ SQL but ≤ AL, report the compound as not detected (U) at the reported concentration.
If the concentration is ≥ SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately
Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met _____
Criteria were not met
and/or see below _____

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.
List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.
Matrix: solid/aqueous

SAMPLE ID	**SURROGATE COMPOUND**				**ACTION**
	1,2-DCA	**DBFM**	**TOL-d8**	**BFB**	

QC Limits* (Aqueous)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____ ___to_____
QC Limits* (Solid-Low)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____ ___to_____
QC Limits* (Solid-Med)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____ ___to_____

1,2-DCA = 1,2-Dichloromethane-d4 TOL-d8 = Toluene-d8
DBFM = Dibromofluoromethane BFB = Bromofluorobenzene

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:
If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.
If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met _____
Criteria were not met
and/or see below _____

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID:_____ Matrix/Level:_____

MS OR MSD COMPOUND % R RPD QC LIMITS ACTION

==========

_____

_____

_____

_____

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met _____
Criteria were not met
and/or see below _____

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID:_____ Matrix/Level/Unit:_____

COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION

Actions:

* If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).
* If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met _____
Criteria were not met
and/or see below _____

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID COMPOUND % R QC LIMIT

_____
_____
_____
_____
_____
_____
_____
_____

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).
If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.
If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met _____
Criteria were not met
and/or see below _____

IX. LABORATORY DUPLICATE PRECISION

Sample IDs:_____ Matrix:_____

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.
Suggested criteria: RPD $\pm$ 30% for aqueous samples, RPD $\pm$ 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met _____
Criteria were not met
and/or see below _____

IX. FIELD DUPLICATE PRECISION

Sample IDs:_____ Matrix:_____

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.
Suggested criteria: RPD $\pm$ 30% for aqueous samples, RPD $\pm$ 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met _____
Criteria were not met
and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

* Area of +100% or -50% of the IS area in the associated calibration standard.
* Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION

Actions:

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO – 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

2. If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were met _____
Criteria were not met
and/or see below _____

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

All criteria were met _____
Criteria were not met
and/or see below _____

XII. QUANTITATION LIMITS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION

B. Percent Solids

List samples which have < 50 % solids

_____

_____

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)